AMERICAN AGRICULTURIST

FOR THE

Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

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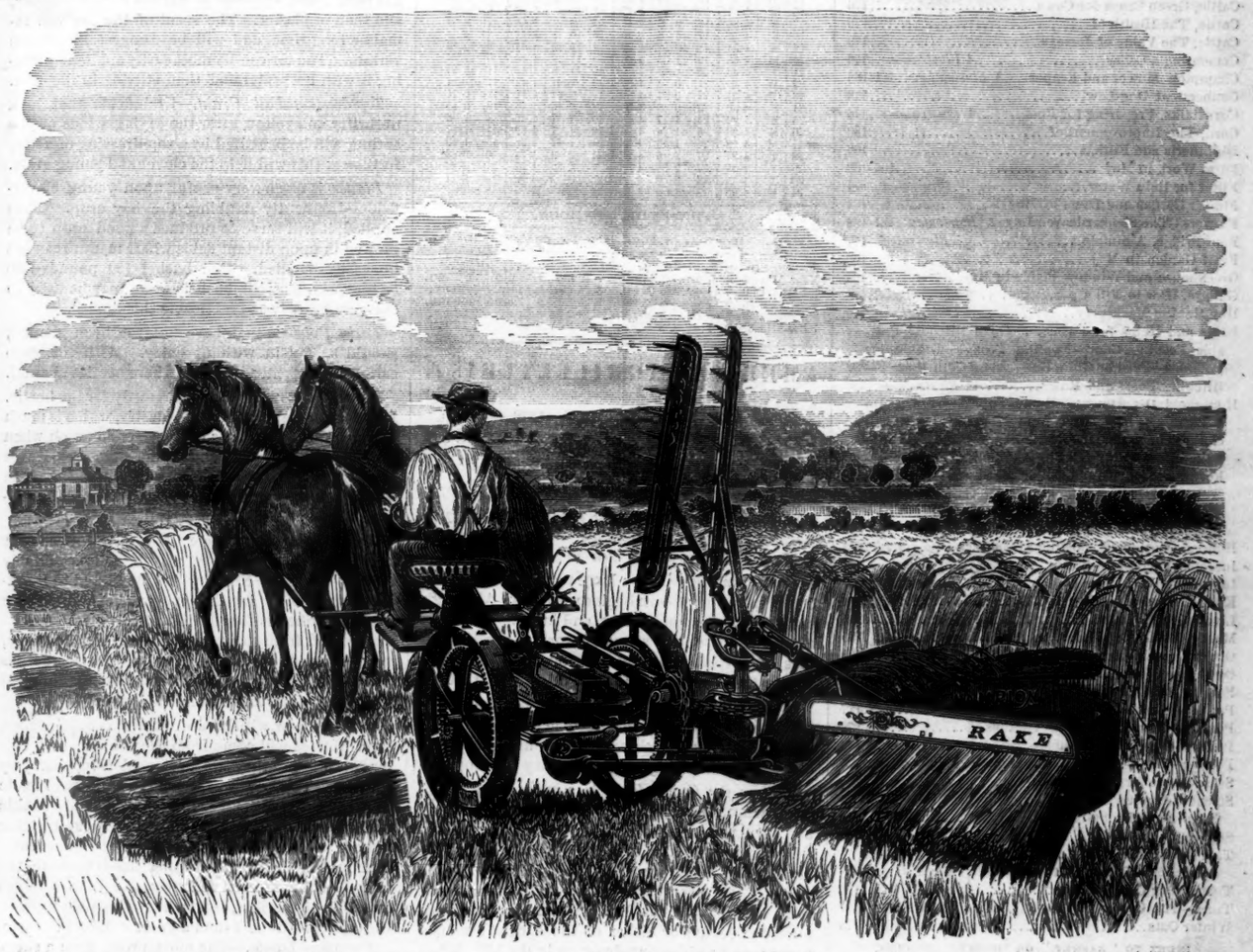


THE CHAMPION COMBINED MOWER AND SELF-RAKING REAPER.—*Drawn and Engraved for the American Agriculturist.*

Until recently, combined reapers and mowers have been considered unsatisfactory machines, and farmers have been to some extent prejudiced against them. This has been unfortunate, because few farmers can afford to buy two machines to perform two similar operations, when one could be made to serve the purpose. But after six years of successful work it has been proved that the mechanical difficulties in the way of the effective operation of a combined machine have been vanquished by the manufacturers of the machine of which we give the above illustration. This is the Champion Combined Self-raking Reaper and Mower, made at Springfield, Ohio. The character of the machine is readily apparent from the engraving, and the full details, which show the reaping-machinery added to the mower, are given on another page. At figure 1, on page 168, the mower is shown so clearly, that there can be no mistake about the parts, and at figure 2 the added apparatus is so shown, that the operation of the combined machine is equally clear. It is needless to say anything in regard to the reputation of the Champion machines. The name is familiar to every farmer, who has seen or heard of mowers and reapers, and the fact that 35,000 of these machines are made annually in the workshops of the Company—the largest manufactory of agricultural implements in the world—evidences the estimation in which they are held. In regard to awards for excellence at exhibitions, the Champion machines have stood in the front rank of those exhibited. It took five first premium medals at the Centennial Exhibition, and an award of five diplomas for the finest exhibit in the Hall and for merit in the great field trial held in connection with the Centenpial. At this trial the Champion machine recorded the remarkably light and hitherto unexampled draft of only 131 pounds. It also succeeded in cutting perfectly grass that had been beaten and laid by storms, and in addition, to make the test more severe, had been flattened by a heavy roller drawn over it. No severer test than this could be imagined. As a reaper it cuts the grain successfully, although it may be laid and tangled in the worst manner, and delivers it in good and even gavels ready for binding. These two important operations are accomplished equally well, and the change from mower to reaper or back again can be made with ease in twenty minutes. Clover-seed and flax may also be successfully harvested with it. The catalogues of makers of first-class machinery are publications of high excellence, and serve a purpose beyond mere advertising. To this the catalogue describing the Champion is no exception, as the machine is shown in action in its various combinations and positions, including its appearance on the road, while every detail of machinery is given with such distinctness and accuracy, that one at all acquainted with mechanics can, by a study of the catalogue, understand the construction of the machine, and form an opinion of its working in the field, almost as well, as from an actual inspection of the thing itself.

Contents for May, 1878.

Among the Farmers, No. 28.—Tramps—Feeding Work Horses—Horses Lying Down—Chances for Farming—Supplying Mills—Free Trade in Milk—Beet Sugar.....174-175
Barn, Plan of Wisconsin.....3 *Illustrations*..179
Bee Notes for May.....5 *Illustrations*..169
Between New Zealand and New York 169
Birds, The European Sparrow.....179
Birds, The Penguins.....*Illustrated*..173
Boys and Girls' Columns.—Aunt Sue's Chats; Card-Basket; Red Varnish; Shirt Bosoms; Puzzle Drawing—The Doctor's Correspondence: The Telephone—Aunt Sue's Puzzle Box—Young Microscopist's Club: More Mounting; Water Fleas; Vorticellas; Willows and Poplars—Little Gardeners and Little Gardens.....13 *Illustrations*..185-188
Broad Tires to Wheels.....179
Cattle, Green Crops for Cows.....176
Cattle, The Health of.....179
Cattle, The Value of Jerseys.....179
Cementing a Cellar.....4 *Illustrations*..176
Champion Mower and Reaper....3 *Illustrations*..161-168
Connecticut Dog-Law.....178
Cornstalks, Preparing for Fuel.....4 *Illustrations*..176
Corn, The Improvement of.....180
Diphtheria and Filth.....169
Farm Work in May 162-163
Filter for Rain Water.....*Illustrated*..176
Flower Garden and Lawn in May.....164
Flowers—The Slender-leaved Lily. . *Illustrated*..181-182
Foot-Bridge, A Simple.....*Illustrated*..177
Fruit Garden in May.....163
Greenhouse and Window Plants in May.....164
Gulleys, How to Fill Up.....2 *Illustrations*..178
Hay Making Machinery.....3 *Illustrations*..170
Hints and Helps for Farmers.—Open Ditches—Portable Feeding Coop—Feeding Trough—Dibble for Potatoes—Feed or Grain Bin—Useful Corn Marker—Hitching Posts and Rings.....11 *Illustrations*..180
Household Department.—Home Topics.—How to Do a Washing—Protection from Moths—Winter Bedclothes in Summer—Bean Soup—Potted Ham—Baked Ham—Rhubarb Pie—Gardening for a Housekeeper—Women's and Children's Shoes—Household Notes and Queries—Cooking Veal—Gasoline—Yeast—Cottage Pudding—Lemon Pie—Carpet Moths—Recipes Wanted.....2 *Illustrations*..183-184
Houses, Contiguous, Costing $1,000 each.....4 *Il*..172
Insects—The Potato-Beetle.....183
Improving Wet Meadows.....6 *Illustrations*..177
Kitchen Garden in May.....164
Live Stock Markets.....165
Market Reports.....165
Orchard and Nursery in May.....163
One Grape Vine.....3 *Illustrations*..182
Peas, A Wire Trellis for.....*Illustrated*..183
Poultry—How to Raise Ducks.....177
Poultry—Mortality Among Turkeys.....178
Poultry—The Light Brahmas.....179
Poultry—White-crested White Polish. ..*Illustrated*..173
Scare-Crows for Cornfields.....2 *Illustrations*..176
Science Applied to Farming, No. 41.—More About Farm Experiments.....171
Small Street Swindle.....*Illustrated*..169
Talks on Farm Crops, No. 15.—The Oat Crop—Value of Oat Hay—Potato Culture—Sowing Mangels.....175
That Butter Compound.....170
Trees—The Catalpa and Its Uses.....*Illustrated*..181
Winter Oats.....175

INDEX TO "BASKET," OR SHORTER ARTICLES.

Acres in Tobacco.....193
Artificial Fertilizer.....194
Ashes and Salt.....194
Bean Planter.....167
Best Cows.....193
Books on Poultry.....167
Business Change.....167
Butter Color.....166
Butter Table.....167
Capons.....167
Catalogues Received....194
Chinese Blocks.....166
Cranberry Culture.....194
Cuba and Artillery.....166
Dentistry.....166
Economic Tree Planting.167
Field Mice.....194
W. C. Flagg's Death.....168
Forestry and Its Needs..167
German Millet.....167
Glasnevin.....194
Grade Jersey Cow.....193
Grass Family.....193
Green Manuring.....194
Hay Fork Carriage.....167
High Farming, no Manure.....168
Lice, To Destroy.....193
Life Insurance.....166
Malt as Feed.....167
Microscope.....166
Nebraska.....167
Officers of Fairs.....166
Oxford Down Ram 194
Peach Prospects.....168
Potatoes on Same Soil...194
Questions to Discuss....194
Reliable Business Men..166
Rotting Sod.....194
Scratches in Horse.....193
Sewing Machines.....167
Sheep Dip.....193
Sheep Shears.....194
Shell Marl.....168
Shepherding 167
Sundry Humbugs.....167
C. Taber's Death.....166
Trial of Steam Engines..167
Wheat in Del. and Md..168
Who is Breeder?.....193

Plaster on Clover.—"J. G. W.," Bates Co., Mo. Plaster should be sown upon clover as soon as the growth is vigorous in spring—about the first week in May is the usual time. 90 to 200 pounds per acre is used.

Calendar for May.

Day of Month.	Day of Week.	Boston, N'Eng land, N. York State, Michigan, Wisconsin, Iowa, and Oregon. Sun rises.	Sun sets.	Mo'n rises.	N. Y. City, Ct., Philadelphia, New Jersey, Penn., Ohio, Indiana, and Illinois. Sun rises.	Sun sets.	Mo'n rises.	Washington, Maryland, Virginia, Kentucky, Missouri, and California. Sun rises.	Sun sets.	Mo'n rises.
		H. M	H. M	H. M.	H. M	H. M	H. M.	H. M	H. M	H. M.
1	W	4 55	6 59	4 4	4 58	6 56	4 6	5 2	6 52	4 10
2	T	4 53	7 0	sets	4 57	6 57	sets	5 1	6 53	sets.
3	F	5 52	7 1	8 45	4 56	6 58	8 39	4 59	6 54	8 34
4	S	4 51	7 3	9 49	4 54	6 59	9 42	4 58	6 55	9 36
5	S	4 49	7 4	10 47	4 53	7 0	10 40	4 57	6 56	10 34
6	M	4 48	7 5	11 36	4 52	7 1	11 30	4 56	6 57	11 24
7	T	4 47	7 6	morn	4 51	7 2	morn	4 55	6 58	morn
8	W	4 46	7 7	0 17	4 50	7 3	0 12	4 54	6 59	0 7
9	T	4 45	7 8	0 50	4 49	7 4	0 47	4 53	7 0	0 43
10	F	4 43	7 9	1 19	4 48	7 5	1 17	4 52	7 1	1 14
11	S	4 42	7 10	1 45	4 47	7 6	1 44	4 51	7 2	1 43
12	S	4 41	7 11	2 9	4 46	7 7	2 10	4 50	7 3	2 10
13	M	4 40	7 12	2 33	4 44	7 8	2 34	4 49	7 3	2 36
14	T	4 39	7 13	2 59	4 43	7 9	3 2	4 48	7 4	3 5
15	W	4 38	7 14	3 29	4 42	7 10	3 34	4 47	7 5	3 39
16	T	4 37	7 15	rises	4 42	7 11	rises	4 46	7 6	rises
17	F	4 36	7 16	9 8	4 41	7 12	9 2	4 45	7 7	8 55
18	S	4 35	7 17	10 8	4 40	7 13	10 1	4 44	7 8	9 55
19	S	4 34	7 18	10 55	4 39	7 14	10 49	4 44	7 9	10 43
20	M	4 33	7 19	11 33	4 38	7 15	11 28	4 43	7 10	11 23
21	T	4 33	7 20	morn	4 37	7 16	11 58	4 42	7 11	11 55
22	W	4 32	7 21	0 2	4 37	7 16	morn	4 42	7 11	morn
23	T	4 31	7 22	0 27	4 36	7 17	0 24	4 41	7 12	0 21
24	F	4 30	7 23	0 49	4 35	7 18	0 46	4 40	7 13	0 45
25	S	4 29	7 24	1 7	4 34	7 19	1 7	4 40	7 14	1 6
26	S	4 28	7 25	1 26	4 34	7 20	1 27	4 39	7 15	1 27
27	M	4 28	7 26	1 45	4 33	7 21	1 47	4 38	7 15	1 49
28	T	4 27	7 27	2 6	4 33	7 21	2 9	4 38	7 16	2 13
29	W	4 27	7 27	2 30	4 32	7 22	2 35	4 37	7 17	2 39
30	T	4 26	7 28	3 0	4 32	7 23	3 5	4 37	7 18	3 11
31	F	4 26	7 29	sets	4 31	7 24	sets	4 37	7 18	sets

PHASES OF THE MOON.

MOON.	D.	BOSTON. H. M.	N. YORK. H. M.	WASH'N. H. M.	CHA'STON H. M.	CHICAGO. H. M.
New M'n	2	8 6 mo.	7 54 mo.	7 42 mo	7 30 mo.	7 0 mo.
1st Quart	9	5 48 ev.	5 36 ev.	5 24 ev.	5 12 ev.	4 42 ev.
Full M'n	16	9 47 mo.	9 35 mo.	9 23 mo	9 11 mo.	8 41 mo.
3d Quart.	23	8 58 ev.	8 46 ev.	8 34 ev.	8 22 ev.	7 52 ev.
New M'n	31	9 4 ev.	8 52 ev.	8 40 ev.	8 28 ev.	7 58 ev.

AMERICAN AGRICULTURIST.

NEW YORK, MAY, 1878.

Hints for Work.

[*The Hints and Suggestions in these columns are never copied from previous years, but are freshly prepared for every paper, from the latest experience and observations, by practical men in each department.*]

Corn Planting.—Over a large portion of the country the planting of corn begins with May. Although early planting is convenient, and in some cases unavoidable to prevent stress of work, yet with corn it is a question if anything is saved by hurrying it into the ground. The first operation, that of

Plowing Sod Ground, we generally postpone until ready to plant, so that the seed may go into fresh mellow soil, and the clover grow as much as possible. With fallow ground this may not apply.

Manure for Corn.—Corn is a gross feeder, and fresh manure is acceptable to it. Where the sod has been top-dressed early in the spring, and the manure turned under with the vigorous growth of herbage, no better preparation can be made for this crop. Then after harrowing, a light dressing of some active artificial fertilizer, guano, blood-manure, fish scrap; or either of the special corn manures may be given broadcast, or in the hill. When the sod has not been previously fertilized, the manure, if coarse, may be spread upon it and plowed under, or, if fine, may be harrowed in. When no stable-manure can be had, a liberal dressing of

Artificial Manure, of some kind, should be used for the corn crop. It is very certain that an improved agriculture must be based upon the use of this kind of fertilizers; because, as we can not help taking something from the soil which, under the best system can not be returned to it, it becomes necessary for us to find something to replace the loss. This we may do by purchasing five or ten dollars worth per acre of artificial fertilizers, and gaining twenty or thirty dollars worth of extra product in the crop. Fertilizers, well applied, can be made to return their cost, and a hundred per cent profit; and this ought to be satisfactory.

How to Use Fertilizers.—Many chemical fertilizers are highly concentrated, and should not be brought into close contact with the seed. We are using several tons of these fertilizers the present season, and apply them in the following way: About two-thirds is sown broadcast on the harrowed soil, and one stroke of the harrow is then given to mix soil and fertilizer together. The seed is then drilled, or planted, and the other third is then scattered evenly upon the surface. In this way a very thorough mixture is secured.

The Quantity to be Used.—After many experiments last season, we have fixed on 500 to 600 pounds per acre, where no other manure is used, and 200 to 300 when the soil does not need a full dose. It is not wise to half feed the soil, any more than to half feed an animal.

Choice, and Preparation of Seed.—No plant is more improved by choice of seed, and careful cultivation, than corn. For some hints on this subject, see article last month. To deter birds from pulling the seed, and cut-worms from nipping the sprouts, it has been found effective to roll the seed in pine-tar, and then in plaster. The scent of the tar will remain a long time, and will be disagreeable to the vermin. The tar can be most easily applied by mixing it with hot water and then stirring in the corn.

Top-dressing Fall Grain.—Grainfields that look unthrifty and yellow after the drying winds of the spring, will be benefited by a top-dressing of active fertilizer; this will help the clover and young grass.

Plaster is often very useful upon young clover-fields—frequently doubling the hay crop. Thus applied, it will serve to produce a good crop to be plowed in upon distant fields where manure can not be easily handled. One bushel (80 pounds), up to four, six, or eight bushels even, may be used to the acre as early as practicable this month.

Early Potatoes, that have not yet been planted, should be got in without delay. With this crop earliness is a great advantage where beetles abound.

Pure Paris Green is the best remedy for the beetle. Last season we mixed it with plaster, which is much cheaper than flour, does not scatter so much when the wind is blowing, and adheres to the leaves equally well. As it is best to be prepared for the beetle, a supply of the Paris green should be procured in readiness for his arrival.

Root Crops.—The article upon "Root Crops for Stock," given last month, may be very profitably read over again. Nothing can be added to it, except, perhaps, to say that where the drill culture there described is found difficult, very good results may be had from culture on the flat. On the whole, mangels are to be preferred to any other root, as they yield better, are more certain, are less troubled with the fly, and make excellent feed.

Horses.—Now, with hard work, teams require good care. Horses will come from the field in much better condition if they are protected from worry by the flies. The best protection is a thin sheet made to fit the neck, with holes for the ears, and to buckle under the throat, and to cover the back, hanging loosely at the sides to give access of air beneath. It should be held by a crupper band beneath the tail. Too much corn fed now, is apt to produce irritation of the skin, and make the animals restless. Cleanliness will be found a great comfort to them.

Sheep and Lambs.—The most profit from a sheep is to raise a lamb that will sell for more than the mother is worth. This can be easily done by caring well for the earliest lambs. A lamb, 90 days old, and well fattened, will often sell for ten dollars in the cities, and half that in country villages. A half-bred Cotswold lamb, fed now with a little mixed oatmeal and bran, and suckled by a native ewe, will make an excellent market lamb. Lambs now being fed should be protected from cold storms, and the ewes should have some extra feed.

Sheep Washing.—To wash the wool on the sheep's back is not a profitable practice. The wool is not half washed, and the difference in price will not pay for the loss of weight, to say nothing of the trouble and risk for both men and flock. If the sheep are kept reasonably clean, and the wool free from rubbish, it will be found better than having to wash them to get rid of unnecessary filth.

Tagging the Ewes should not be neglected; the wool should also be clipped from about the udder. Much disease in the lambs is undoubtedly caused by filth in the mother's wool.

Cows and Calves.—Caution should be exercised in turning cattle on to the fresh grass. Young stock are especially subject to disease from over-feeding with succulent herbage. Black leg, black-quarter, or carbuncular erysipelas, frequent at this season, is so caused. Where there is danger, a seton in the dewlap has been found effective to prevent it. To change the feed gradually, however, is the best preservative of the health. In-coming cows that have been well fed should be watched to prevent garget. To reduce the feed before calving, and to guard the cows against lying out during cold rains, will be safe. Every owner of a cow should possess a good book on the care of cattle. Dadd's "Cattle Doctor" will be found useful in this way.

Swine.—Pigs given a run at grass will do best. The orchard, sown to clover, might well be appropriated to them in part. The effect will be beneficial in two ways; the pigs will have good grazing, and many vermin will be destroyed. If the pigs gnaw the bark, wash the lower part of the trees with some thin mud mixed with cow-dung. A feeding coop, such as is described elsewhere, is useful for young pigs. In this, some milk in a shallow pan may be given them without disturbance from older ones.

Poultry.—Young chicks should now be coming forward. As a rule, those hatched this month, if of good breeds, will begin to lay early in the fall, and continuing through the winter will brood early next spring. The profit of feeding laying hens, when eggs are scarce, is obvious. The loss in feeding "dead heads" through the winter, to lay only when eggs are plenty and cheap, is apparent.

Feed Little and Often to young chicks. Cracked wheat, swollen with hot water, and fed warm, and occasionally mixed with some of the animal meal prepared by Bowker & Co., of Boston, will push them on very fast. One heaped teaspoonful is sufficient at one meal for a brood of a dozen chicks. We find a good place for a coop is beneath a plum or cherry tree. A curculio has no chance to escape their sharp eyes. If properly cared for, poultry ought to pay more profit than anything else on the farm—the garden excepted, perhaps.

Fodder Crops for early use are to be put in as soon as possible. Make a succession of sowings, that the crops may follow each other every ten days.

Oats and Peas, sown together, give a large yield of nutritious green fodder. If the ground is rich and clean, 2½ bushels of oats and 1½ bushel of peas may be sown on a well harrowed field, and covered with a small, shovel-toothed cultivator. A broad, leafy oat and large-growing pea are the best. We have found the "Side" or "Horse-mane" oats and the "Black Marrowfat Pea," best for abundant fodder. For early cutting, the small "Gray Canada" pea, sown with barley, may be substituted.—*Tares or Vetches*, and the "Mammoth Clover" are good fodder crops.

The main Planting for fodder should be corn. The Evergreen Sweet corn; the early Canada Dutton, King Phillip and other small-growing varietes are best. Plant with the Albany, or other planter, in rows 30 in. apart and close together in the row, using about 3 bush. of seed per acre. A fine fertilizer, such as guano, or one of the special corn manures, may be dropped along with the seed with the planter mentioned. If barn-yard manure is to be used, the drills may be opened with a plow, the manure scattered in the furrow and covered with the plow and the seed planted with the planter, or be sown by hand on the manure and covered by the plow. A grain-drill with only three spouts open may be used for sowing fodder-corn.

Poultry Manure.—This is a valuable fertilizer, and may be used with most benefit on corn. It may be scattered in the hill at planting or afterwards spread about the hill upon the surface. It is well to mix it with an equal bulk of plaster.

Notes on Orchard and Garden Work.

It is a common saying among cultivators that, no matter whether the spring is early or late, vegetation will be found the first of June to be about the same, taking one year with another. Still, near New York, as we look from the windows of our country sanctum on April 15th, we feel very sure that we never saw the grass on the lawn so dark a green and needing cutting so much; we have never seen the pear-trees so nearly in full bloom, or the flowering-shrubs so far advanced as now, at any previous writing of the May Notes. This unusual season has made it necessary for us to look further ahead in preparing these Notes, and our often repeated suggestion to consult those of the previous two months, is enjoined with especial emphasis.

Orchard and Nursery.

Planting is generally finished before this time. Trees that have been properly heeled-in will be sufficiently retarded to allow them to be sent from the nurseries. Trees in transit in warm weather are liable to injuries; the methods of treating these were given last month.

Grafting is one of the operations that had better be done too late than too early. The proper time is when the swelling of the buds shows vegetation to be active, and it is risky to do it earlier. The most successful grafting of an orchard we ever saw, was done while the trees were in full bloom. At this season the bark slips readily, and care is required in sawing off the limbs, not to strip it and make a bad wound. It is better now, to quite cut through the bark with a strong knife all round where the saw is to work. Grafting-wax for use now should have more rosin in it, to make it harder, than that applied in cooler weather.

Buds below the Graft.—A gentleman about to graft informed us that he was advised by "a professional," to "scrape the branches," in order to remove every bud below the graft, and called to inquire as to the propriety of this. Whenever a bud starts into growth, the sap flows towards that bud. The buds on the cion are dormant, and will remain so until a union is formed with the stock, sufficient for that to supply the cion with sap to allow its buds to commence growth. If the stock or its branch is entirely deprived of buds, the sap has little inducement to ascend, but if the buds are left nearly up to the point where the grafts are inserted, their starting will cause an abundant supply of nutriment to flow to them, and the chances of the success of the grafts greatly increased. When the buds on the cions have commenced to grow—and not until then—the young shoots below are to be broken or rubbed off.

Insects will increase as the supply of food becomes abundant. Eggs of the *Tent Caterpillar* that have escaped observation, will now hatch, and the small caterpillars will commence to feed, making their webs, or "tents" while yet small; these are best seen while the dew is on them, in early morning. Lye, whitewash, petroleum, and other things have been advised, to be applied with a swab. The quickest, easiest, and surest way is to remove the web, morning or evening, when all are at home, by the hand—gloved or not—and throw it upon the ground and stamp it. *Borers* in the apple and quince are detected by their saw-dust, and by a depression in the smooth bark, those in the peach and other stone-fruits by an exudation of gum. They must be cut out, or be probed and punched to death by means of a wire. *Curculio*, on stone-fruits generally, but on the plum particularly, begins work as soon as the fruit is set; jarring the tree, catching the insects on a cloth, and then killing them, is the only remedy. *Plant Lice* often cover the young shoots; strong soap-suds or tobacco-water will kill them; on low trees the branches may be bent down and dipped; on others the liquid must be freely applied by a syringe or garden-pump.

Young Trees should have the soil kept clean and mellow among them, and, especially if set this spring, should have a mulch before dry weather sets in. A tree properly planted rarely needs stakes, but if any are disposed to grow crooked, it is best to remedy this while they are young, and stake them.

Thinning of Fruit.—Those who practice this, should begin as soon as the crop is fairly set. Others may doubt its value, but no one who grows choice fruit for market can afford to neglect it. The experience of a single season with two trees, side by side, will decide the matter. Let one tree ripen all the fruit that sets, and from the other remove three-fourths of the crop. Keep an account of the cost of thinning, and of the returns from the fruit from each tree.

The Black Rot is not confined to plum trees, but attacks cherries, and we have seen the same or something very similar on Nectarines. At its worst it is in the form of large black, ragged excrescences; it begins by a small swelling and breaking away of the bark. Cutting off and burning all affected branches is the proper remedy. When the excrescences are not large and few, cutting them out down to sound wood, and washing the wound with a solution of chloride of lime has been found useful.

The Blight comes without warning; we only know of it by the death of a branch, several branches, or sometimes of the whole tree. Cutting back to sound wood, if it takes the whole tree, and burning the prunings, is all that can be done.

Seed Beds of fruit and forest trees should be kept free of weeds, the soil loosened, and where the seedlings stand too close, thin them. Forest-tree seedlings, especially evergreens, must have shelter from the hot sun; a lattice of laths, or a screen of brush may be put over them, but supported in such a manner as to allow a free circulation of air.

Fruit Garden.

Mulching is of great benefit to a large share of the small fruits. A mulch, while it prevents evaporation and overheating the soil, allows the rains to pass through, and by preventing the beating of storms, keeps the soil mellow and porous. Because those who live near the coast often write of the benefits from using salt hay, many have an idea that this is the necessary material for a mulch. Whatever mechanically protects the soil, and meets the above-named conditions, may be used. Bog-hay, straw (always abundant in grain districts), corn-stalks, chips (sawdust is not advisable, as it breeds fungi,) spent tan-bark, litter from stables, and even small stones, have all been successfully used for the purpose.

Insects will be troublesome here. See Notes on Orchard, for insects attacking trees. Those peculiar to special fruits are treated under the proper head.

Strawberries.—The sooner the mulch is applied, the better; aside from its other uses, it is important in keeping the fruit clean. In some States, the harvest is over; in others, it is now at its hight, while it is still anticipated elsewhere. Too much care can not be given to picking and pickers. We saw (April 15) a fine lot of South Carolina berries with their value diminished one-half because an over-ripe berry or two was in each basket. The further the distance the fruit is to be sent, the less ripe it should be. For near markets, the fruit is best picked into the baskets, and not again handled; but if to be *en route* for 24 hours or more, it should be picked in flat baskets, taken to a shady place to cool off, and then carefully assorted and put into the baskets or cups, taking care to put in not a single berry so ripe that it will soften and crush on the passage. The precise degree of ripeness can only be learned by experience, but it is safe to say, in general terms, that for a trip of 24 hours, no *full-colored* fruit should be packed.

The White Grub often makes sad work with strawberries, and their presence is not known until the mischief is done. When a strawberry plant wilts, take it up and search for the grub before it gets to and eats the roots from another plant.

Blackberries and Raspberries will now be making their growth of canes for next year's fruiting. Three or four canes are usually enough for each stool, all others are to be cut away. As soon as tall enough, tie them to the stake or trellis, and when they reach the desired hight, stop them by pinching out the top. Three to four feet is enough for raspberries, and six or seven for blackberries. If rust appears, cut and burn the diseased stems.

Currants and Gooseberries.—No plants are more benefited by a mulch than these; very littery manure is excellent for them; it tends to prevent mildew, and greatly prolongs their season. The cur-

rant-worms must be taken in hand at their first appearance; the insect deposits its eggs on the under side of the lower leaves, and if a watch is kept for these, much trouble may be avoided by crushing the eggs. As soon as the leaves appear to be eaten, begin the war. *White* Hellebore is the efficient remedy. It is sold at the drug stores in fine powder. This may be sifted upon the bushes, but it is better to apply it with water. Put a tablespoonful of the powder into a bowl or other vessel, and pour on a little boiling water; thoroughly stir until the powder is all wetted, then add more boiling water, a quart or so, stirring to completely mix it; pour this into a pail, filling the pail with cold water. Apply this with a syringe or garden pump; in three days apply again; if more worms appear, repeat. Three applications are usually sufficient.

Grape Vines, in northern localities, at least, do not need a mulch; they do better with their roots in warm soil. Sufficient is said on the management of the vine at this time on page 182. As the shoots develope, there will often be found a caterpillar enrolled in the young leaves. It does less injury than may be supposed, though as it disfigures some of the leaves, it is well to remove it, which can only be done by hand picking. When the vine flowers, Rose-bugs will usually find it out, and gather upon the clusters. Early in the morning, while they are torpid, shake them off into a pan or other vessel containing water, and kill afterwards by scalding. Beetles and other large insects that appear later, must be hand-picked.

Training the Vine.—If one has only a few vines, it will pay him to train them in a regular manner, if the situation will allow, and to have Fuller's "Grape Culturist," or other good work, as a guide. Our remarks on page 182 apply to young vines. For fruiting vines, we may state a few general principles, applicable to all vines, however trained. The fruit is always borne on the *shoots* (see page 182) of the present year. The *clusters* of flowers, and afterwards fruit, appear opposite the lower leaves in the place of *tendrils*. There are usually three of these, rarely more than four. Market growers find that it pays to remove all but one or two bunches. When the shoot has made two or three leaves beyond the uppermost cluster, its further growth may be stopped by pinching off the end, though some prefer to leave four or more leaves. *Laterals* will appear on these shoots, which are to be treated as directed on page 182. All barren shoots, unless wanted to supply canes for next year, and all shoots that appear where they are not wanted, are to be broken out as soon as they start. The young shoots are very brittle, and should be kept tied up to the wires of the trellis, if the vine is trained to one.

Kitchen and Market Garden.

In many localities it is the custom to move on the first of May, and those who are so unfortunate as to change their residence at this time, will begin their gardening rather late. This should not discourage them, as, with the exception of a few things, late sowing will generally give good crops, especially if there is water at command. Those who begin late will find many useful hints in these Notes for the past three months, and if in doubt about varieties, they may consult the list on page 62 in February last.

Succession Crops of spinach, radishes, etc., should be sown every 10 or 15 days, to keep up a supply.

Tender Vegetables, such as squashes, melons, and all of that family, beans, okra, etc., are to be sown at corn-planting time, when the soil is warm.

Buying Plants.—Those who have small gardens and have not much time, will find it cheaper to buy the few tomato, pepper, egg-plants, celery, and such other plants as they need, than to raise them.

Asparagus should be cut by a careful hand, who will not injure the plants. That for market should be bunched and kept in an upright position.

Beans.—For runners, set the poles first, in well-manured hills, 4 feet apart each way. Limas should not be planted until cold rains are over; put into the ground eye downwards, 4 or 5 beans to the hill.

Beets.—Thin the early-sown; the thinnings make excellent greens and are preferred by many to all others; sow the main crop—Long Blood is best.

Carrots—Sow, using a plenty of seed, so that the plants may break the ground well.

Cabbages and Cauliflowers.—Set out from hot-beds as soon as the plants are well hardened, setting well down in the soil. Sow seeds for the late crops.

Celery.—Sow seed, if not already done, covering but lightly; roll or pat the surface down firmly with the back of the spade. The soil must be worked as soon as the rows can be seen; to assist in this, sow a few radish-seeds with the celery.

Corn.—Sow early sorts as soon as safe, and it is well to put in a little, in advance of the season, to take its chances. The drills may be 3 or 4 feet apart, according to the hight of the variety.

Cucumbers and Melons.—Sow seeds and put out plants from hot-bed as soon as cold nights are over. Hand-lights are useful for these.

Egg-Plants are the last thing to go from a hot-bed. Set when the weather is warm. Look out for potato-beetles, which are very fond of these.

Horse-Radish is usually put between rows of early cabbages. Plant the sets 10 inches deep.

Kohlrabi.—Sow, and thin plants to 8 or 10 inches.

Lettuce transplant from hot-bed; sow for late crop.

Squashes.—Make well-enriched hills for the bush-sorts, 4 feet each way, and manure the whole ground for the later kinds with well manured hills 8 feet each way, using an abundance of seed.

Sweet Potatoes.—Put down well decomposed manure in rows 30 or 36 inches apart; with a garden plow turn a furrow towards it from each side, to form a ridge; afterwards finish up the ridges with hoe and rake. Plant the potato sets or slips on this ridge, 15 inches apart; open a deep hole with a dibble or mason's trowel, and put the set down so that several joints will be covered. If the soil is not fresh and moist, pour water into the holes, and let it soak away before setting the plants. The last week in May, or the first week in June, is early enough for the climate of New York City.

Tomatoes.—A light, warm soil gives the earliest crops, but the bearing lasts longer in a strong and rich one. In a garden, a trellis, or some kind of support, should be given the vines. Our past volumes give a number of devices. Brush, to keep the fruit from the earth, is better than nothing.

Weeds and Weeders.—As soon as the rows of seedlings can be seen, break the crust; this is especially necessary in soils that bake on the surface. An excellent implement for this and much other weeding is a rake with long, sharp teeth; this used when weeds are very small, allows of rapid and effective work; the sun disposes of the uprooted weeds by thousands. Another implement that we can commend to every gardener is the lance-headed hoe. We are not aware that the best form is on sale; we have ours made. The blade is a triangle of steel 4½ in. long by 2½ in. wide at base, and flat; a saw-plate will answer. This is riveted to an iron rod shaped like a goose-neck, of such a bend as will allow the blade to lie flat when the handle is erect; the rod is fastened into a common hoe handle. If the edges are kept sharp, an astonishing amount of work may be done with it.

Odds and Ends.—Do not delay brushing peas until they fall over....Slaked lime, or a mixture of unleached wood ashes and plaster (gypsum), should be kept at hand; it is not only a good fertilizer, but of great use on young cabbages, turnips, young plants of the squash family, and all others attacked by the flea-beetle, and other small insects....Hand-pick the first crop of potato-beetles on early potatoes, and be ready to give Paris green when the larvæ appear....Have a supply of seedlings of Sage, Thyme, and other sweet herbs, to occupy the land when other crops come off....Thinning is rarely done to excess; the earlier it is done after the plants are large enough to handle, the better; root crops should be at least as far apart as the average diameter of the roots, and more would be better....All vegetables to be sold should be sent to market in neat order; beets and all roots, asparagus, rhubarb, etc., are to be washed and put in bunches.

Flower Garden and Lawn.

If a lawn must be started so late as this, it is advisable to use turf, if it can be procured. See last month on sowing grass seeds; it is well now to mix a quart or so of oats with each bushel of grass seed, that the oats may shade the young grass; the oats should be mown before they flower

The Lawn Mower should be used on well established lawns once a week or ten days, until the drouths come, when the slower growth will require it less frequently.

Weeds in Lawns, if annuals, are soon killed by frequent mowing; thistles, docks, plantains, and other perennials, can be pulled, when small, if the ground is moist, or if too large, cut below the surface with a knife. A few children will soon clear them out at a little expense.

Bedding is usually of greenhouse tender plants, which should not be put out until cool nights are over, and they should have rich soil, that they may produce an effect as soon as possible. Most annuals used for bedding are hardier, but these need shelter, if cold winds come before they get established, by brush stuck amongst them.

Cannas and Tuberoses ought not to be put out until settled warm weather, and where this comes late, it is well to start them in boxes of earth in a greenhouse, frame, or sunny window.

Gladioluses are almost hardy. It is well to make two or three plantings at intervals of two weeks, to prolong the blooming season.

Dahlias are very tender, and are best started in a hot-bed, or in a sunny corner where they can be sheltered at night. Before planting a Dahlia, plant a stake, and keep it tied up as soon as tall enough to tie, else a wind will break the tender stem.

Evergreens are, according to some, likely to do better if transplanted just as the new growth starts; our experience is, that the important point is to never let the roots get dry; an exposure of an hour to drying winds will often place the roots in a condition past recovery. We can not too highly recommend the practice of *mulching* newly-planted Evergreens with stones. Place stones from the size of a cocoanut up to as large as one can conveniently lift all around the tree and over the roots; these will keep the roots moist, and *anchor* the tree better than any stakes; these trees offer great resistance to the wind, and are often bent in the direction of the prevailing gales, unless some such precaution is taken.

Climbers should be introduced wherever there is a proper place for them. A rough screen covered with annuals, such as Morning Glories, Canary Creeper, Thunbergias, etc., and with Maderia Vine, Maurandia, Cobœa, etc., may be made to shut out an unsightly object and be pleasing in itself. Sweet Peas should have been put in as soon as the ground was open; if sown now, put two or three inches deep; if no other method is better, stick them like garden peas; have a plenty for cut flowers.

Annuals started under glass, or in window-boxes, should be hardened off by gradual exposure, before putting them in the open ground.

Perennials of the later kind may be had of the dealers. Do not forget Chrysanthemums to make the garden bright until the last.

Roses require almost as much care, so far as insects go, as potatoes; but these are as essential in the flower garden as the potatoes in the kitchen garden. Begin with tobacco water for the Rose-louse or aphis; go for the slug with White Hellebore, as advised under Fruit Garden, for Currant Worms. When the Rose-bugs come, treat them as directed under Grape Vines.

Greenhouse and Window Plants.

The custom of completely clearing out the greenhouse is not so general as formerly. With proper attention to shade, and water, and insects, it may be kept attractive all summer. If one has

provided Gloxinias, Gesneras, and other summer bloomers, a grand show may be made.

Evergreen Plants, such as Camellias, Ardisias, and other broad-leaved sorts, must have partial shade, but not under the drip of trees; must be set upon coal ashes, so that worms will not enter the pots; must be placed where they will not be blown over; and must also be put where they will not be neglected if they need water, or other attention.

Fuchsias and Cactuses, the summer bloomers, make grand ornaments to a veranda, and they can have the needed shade and care. The Cacti, when making their growth, need water, however dry they may be kept when at rest.

Plunging Pots of plants may often be done with advantage to decorate the grounds. Put the rim of the pot just level with the ground and place a layer of coal ashes under the bottom to keep out worms.

Hanging Baskets often used on verandas dry out very rapidly, especially those of wire-work lined with moss. Every few days these should be placed in a pail or tub of water and soaked thoroughly.

Commercial Matters—Market Prices.

The following condensed, comprehensive tables, carefully prepared specially for the *American Agriculturist*, from our daily record during the year, show at a glance the transactions *for the month ending April 12th*, 1878, and for the corresponding period last year:

1. TRANSACTIONS AT THE NEW YORK MARKETS.

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	271,000	3,102,000	1,413,000	293,000	387,000	496,000
28 d's *last* m'th	343,000	3,804,000	1,516,000	91,500	569,000	403,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 d's *this* m'th	326,000	3,491,000	3,105,000	412,000	563,000	619,000
28 d's *last* m'th	339,000	3,912,000	3,238,000	243,000	551,000	526,000

2. *Comparison with same period at this time last year.*

RECEIPTS.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1878..	271,000	3,102,000	1,413,000	293,000	387,000	496,000
26 days 1877..	265,000	289,000	1,711,000	47,000	304,000	674,000
SALES.	*Flour.*	*Wheat.*	*Corn.*	*Rye.*	*Barley.*	*Oats.*
27 days 1878..	326,000	3,491,000	3,105,000	412,000	563,000	619,000
26 days 1877..	334,000	1,265,000	2,307,000	53,000	257,000	896,000

3. *Exports from New York, Jan. 1, to Apr. 17.*

	Flour. bbls.	*Wheat.* bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Peas.* bush.
1878....	770,100	12,898,746	5,292,029	974,966	1,153,912	85,564	145,351
1877....	353,057	2,878,510	5,638,140	851,280	121,229	53,125	117,060
1876....	569,514	4,994,177	3,668,928	43,320	—	63,894	258,251

4. *Stock of grain in store at New York.*

	Wheat. bush.	*Corn.* bush.	*Rye.* bush.	*Barley.* bush.	*Oats.* bush.	*Malt.* bush.
Apr. 15, 1878..	1,370,081	541,648	106,375	396,861	857,278	253,424
Mar. 11, 1878..	1,639,371	420,484	114,260	660,145	1,090,897	275,705
Feb. 11, 1878..	1,974,035	774,470	208,816	831,673	1,415,633	318,079
Jan. 10, 1878..	2,586,715	105,909	286,353	918,898	1,687,985	321,474
Dec. 10, 1877..	2,941,962	1,723,229	399,977	864,787	1,570,052	358,849
Nov. 5, 1877..	964,374	2,643,502	166,949	368,429	1,770,759	328,388
May 7, 1877..	761,686	468,809	193,016	174,375	347,881	291,654
Feb. 7, 1877..	3,088,819	2,302,261	374,142	671,114	956,114	388,605
Jan. 8, 1877..	3,668,010	3,077,504	341,750	905,615	1,088,104	425,406
Dec. 11, 1876..	3,110,283	3,385,554	218,841	873,310	1,182,322	512,041
Apr. 10, 1876..	3,393,074	232,140	68,429	200,331	706,232	436,942
Jan. 10, 1876..	5,802,233	663,982	100,741	325,191	1,080,300	307,438

Gold has been up to 101½, and down to 100¼, closing April 17, at 100¼, as against 100¾ on March 12; 101⅞ on Feb. 12; 102⅛ on January 12; 103 on December 12; 102⅝ on Nov. 12; 103 on October 12; 105⅜ on July 12; 104¼ on June 12; 107¼ on May 12; 105⅞ on April 12, of last year....An active business has been transacted in Breadstuffs, during the month, largely on export account, and in this connection, especially notable in Wheat, Corn, Rye, and Barley, with, toward the close, a considerable movement in No. 2 Chicago Oats for shipment to France. Prices of most articles in the Breadstuff line, however, have fluctuated frequently, and widely, as influenced, mainly, by the tenor of the cable reports from Europe, as to the political position and outlook there. Speculation was stimulated early in the month by the warlike advices, but with the more peaceful aspect of the foreign situation, as represented later on, this feature measurably subsided. As we close this, the general market is irregular, and rather weak. The purchases of Rye for Germany and Holland reached unusual proportions....Provisions were quite freely dealt in, Hog products attracting most attention, largely on speculative account, but at very variable figures, leaving off, as a rule, heavily, under urgent offerings. Butter, Cheese, and Eggs receded in value, on liberal supplies and a moderate demand....Hops and Seeds were less sought after, and fell off materially....Wool was much depressed, and in comparatively limited demand, as well for manufacturing purposes as on trade account, closing in favor of buyers....Tobacco has been in less request, and quoted lower. Export movement light ...Hay and Straw have been quite moderately dealt in, but, as a rule, quoted about steady. ..Ocean freights have been more active, but unsettled as to rates, leaving off weak....Grain rates by steam to Liverpool closed April 12th at 8*d.* (about 16 cents) per bushel; Glasgow, 8¼@9*d.*; London, 8¼*d.*; Bristol, 9*d.*; Hull, 8¼*d.*; the Continent, 8¼@9¼*d.*; by sail to Liverpool, 6¾*d.*; London, 7¾*d.*; ₱ bush. Flour to Liverpool, by steam, 2*s.* 9*d.*@3*s.* (about 66 cents ₱ bbl.); by sail at 2*s.*@2*s.* 3*d.*; London, 2*s.*, and by steam, 3*s.*; Bristol, by steam, 3*s.*, and sail, 1*s.* 10½*d.*@2*s.* per bbl. Provisions by steam to Liverpool, 30*s.*@35*s.* per ton. Cotton by sail $^{1}/_{64}$@¼*d.*, and steam $^{7}/_{32}$@¼*d.* ₱ lb. Grain, by sail, for Cork and orders, at 6*s.*@6*s.* 3*d.* per quarter, (8 bushels), and to Continental ports, 5*s.* 6*d.*@6*s.* 3*d.*; Italian ports, 5*s.* 6*d.*@6*s.*; and from Philadelphia for Cork and orders, 6*s.*@6*s.* 3*d.*, and from Baltimore for Cork and orders, 6*s.* 3*d.*@6*s.* 9*d.*, in bags, 15@15½ cts. per bushel.

CURRENT WHOLESALE PRICES.

	Mar. 12.	Apr. 17.
PRICE OF GOLD	100 3-4	100 3-8
FLOUR—Super to Extra State	$4 10 @ 5 50	$4 15 @ 5 60
Super to Extra Southern	4 10 @ 7 75	4 25 @ 7 75
Extra Western	4 75 @ 8 50	4 90 @ 9 00
Extra Genesee	4 75 @ 6 25	5 00 @ 6 25
Superfine Western	4 10 @ 4 65	4 15 @ 4 90
RYE FLOUR, Superfine	3 90 @ 3 90	3 10 @ 4 15
CORN-MEAL	2 50 @ 3 10	2 25 @ 3 15
BUCKWHEAT FLOUR, ₱ 100 lbs	1 25 @ 1 85	Nominal.
WHEAT—All kinds of White	1 35 @ 1 41	1 25 @ 1 46
All kinds of Red and Amber	1 00 @ 1 36½	1 00 @ 1 40
CORN—Yellow	52 @ 58	52 @ 57
Mixed	47 @ 60	45 @ 58
White	52 @ 61	50 @ 57
OATS—Western	33 @ 40	32 @ 40
State	35 @ 41	33 @ 40
RYE	70 @ 76	67 @ 75
BARLEY	48 @ 95	49 @ 90
BARLEY MALT	60 @ 1 20	65 @ 1 20
HAY—Bale, ₱ 100 lbs	40 @ 85	40 @ 85
STRAW, ₱ 100 lbs	35 @ 65	35 @ 65
COTTON—Middlings, ₱ lb	11 @ 11¼	10½@ 10⅝
HOPS—Crop of 1877, ₱ lb	5 @ 13	5 @ 10
" old, ₱ lb	1 @ 5	1 @ 3
FEATHERS—Live Geese, ₱ lb	33 @ 47½	35 @ 47½
SEED—Clover, West. & St'n ₱ lb	8 @ 8½	7 @ 7¾
Timothy, ₱ bushel	1 25 @ 1 40	1 25 @ 1 40
Flax, ₱ bushel	1 45 @ 1 50	1 45 @ 1 50
SUGAR—Refi'g & Grocery ₱ lb	6¼@ 8¾	6¼@ 8⅝
MOLASSES, Cuba, ₱ gal	20 @ 35	26 @ 38
New Orleans, ₱ gal	22 @ 48	30 @ 52
COFFEE—Rio (Gold)	14 @ 17¾	13½@ 17
TOBACCO, Kentucky, &c., ₱ lb	4 @ 15	2½@ 14
Seed Leaf, ₱ lb	4 @ 50	4 @ 50
WOOL—Domestic Fleece, ₱ lb	25 @ 52	25 @ 48
Domestic, pulled, ₱ lb	28 @ 40	20 @ 36
California, spring clip	18 @ 28	18 @ 28
California fall clip	12 @ 20	10 @ 19
TALLOW, ₱ lb	7½@ 7¾	7¾@ 7¾
OIL-CAKE—₱ ton	30 00 @31 00	30 00 @31 50
PORK—Mess, ₱ barrel	10 00 @10 25	9 75 @10 25
Extra Prime, ₱ barrel	Nominal.	8 50 @ 8 75
BEEF—Extra mess	12 00 @12 50	12 00 @12 25
LARD, in trcs. & bbls, ₱ 100 lb	7 25 @ 7 65	6 75 @ 7 75
BUTTER—State, ₱ lb	10 @ 36	10 @ 35
Western, poor to fancy, ₱ lb	10 @ 38	8 @ 36
CHEESE	5 @ 14	5 @ 13½
EGGS—Fresh, ₱ dozen	10 @ 15½	9 @ 11
POULTRY—Fowls, ₱ lb	7 @ 14	8 @ 13
Chickens, ₱ lb	— @ —	20 @ 50
Turkeys—₱ lb	5 @ 14	8 @ 16
Geese, ₱ pair	1 00 @ 2 00	1 12½@ 2 00
Ducks, ₱ pair	60 @ 1 00	60 @ 1 12
" ₱ lb	— @ —	12 @ 20
Roosters, ₱ lb	5 @ 6	5 @ —
DUCKS, Wild, ₱ pair	30 @ 2 25	20 @ 1 50
GROUSE, ₱ pair	75 @ 1 50	Nominal.
PIGEONS, wild, West'n, ₱ doz	1 00 @ 2 00	1 12½@ 1 25
SNIPE, per doz	1 50 @ 2 75	1 12½@ 1 25
RABBITS, ₱ pair	20 @ 25	Nominal.
HARES, ₱ pair	20 @ 25	Nominal.
TURNIPS ₱ bbl	50 @ 1 00	25 @ 50
CABBAGES—₱ 100	2 00 @ 4 50	2 50 @ 6 00
" Red	2 50 @ 4 50	— @ —
ONIONS—₱ bbl	1 12½@ 1 87½	75 @ 1 75
" ₱ crate	— @ —	2 00 @ 6 00
CARROTS, ₱ bbl	75 @ 1 00	50 @ 75
POTATOES, new, ₱ bbl	4 50 @ 5 00	5 00 @ 6 00
" ₱ crate	— @ —	1 50 @ 1 75
POTATOES—old, ₱ bbl	1 25 @ 1 87½	1 00 @ 1 50
SWEET POTATOES—₱ bbl	1 25 @ 2 50	1 25 @ 2 50
BEETS, ₱ bbl	60 @ 75	60 @ 75
" Bermuda, ₱ crate	75 @ 1 00	75 @ 1 50
APPLES—₱ barrel	3 00 @ 5 50	2 50 @ 4 50
PEANUTS, domestic, ₱ bush	1 00 @ 1 45	85 @ 1 40
STRAWBERRIES, ₱ quart	— @ —	20 @ 30
CRANBERRIES—₱ bbl	7 00 @ 9 00	6 50 @ 8 50
" ₱ crate	1 25 @ 2 50	1 50 @ 2 50
ORANGES, Florida, ₱ bbl	3 50 @ 5 50	4 00 @ 7 00
RADISHES, nw So, ₱ 100 bun	— @ —	50 @ 1 25
PEAS—Canada, in bond, ₱ bu	82 @ 83	83 @ 84
" green, ₱ bush	1 15 @ 1 25	1 12½@ —
" new So., ₱ crate	— @ —	1 25 @ 2 25
BEANS—₱ bushel	1 45 @ 2 50	1 25 @ 2 25
BROOM-CORN	4 @ 7¾	4 @ 7¾
SPINACH, ₱ bbl	1 50 @ 2 50	1 00 @ 2 50
KALE, ₱ bbl	1 00 @ 1 25	75 @ 1 00
TOMATOES, ₱ box	75 @ 1 00	75 @ 1 00
ASPARAGUS, So., ₱ doz. bun	— @ —	3 50 @ 5 50
LETTUCE, ₱ bbl	— @ —	2 00 @ 3 00
SQUASH, ₱ bbl	— @ —	2 00 @ 2 50

New York Live-Stock Markets.

RECEIPTS. WEEK ENDING	*Beeves.*	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Mar. 18	9,141	86	1,023	22,710	26,405
Mar. 25	10,425	109	1,412	17,653	24,797
Apr. 1	10,432	62	1,700	19,073	36,397
Apr. 8	9,347	48	2,093	19,631	31,608
Apr. 15	10,926	85	2,600	18,917	29,427
Total for 5 *Weeks*	50,271	390	8,833	97,984	148,724
do. *for prev.* 4 *Weeks*	36,243	327	3,611	86,718	139,674

	Beeves.	*Cows.*	*Calves.*	*Sheep.*	*Swine.*
Average per Week	10,055	78	17,66	19,590	29,745
do. do. *last Month*	9,060	132	953	21,679	34,918
do. do. *prev's Month*	8,891	110	840	21,570	35,946

Beeves.—The business of the past five weeks has been very irregular, beginning with an advance on a market as active as at the best of times, it continued to advance with much spirit, and then suddenly fell away to its first condition, losing in a day what it had gained in two weeks. And this in spite of an export demand, which skimmed off over 1,000 head of the cream of the supply at one market, and in one week took off enough to make nearly 9,000 quarters of dressed, besides several hundred of live beeves. The condition of the market may be shown by the fact that beeves fit for export were bought the last week at 10@10¼c. ₱ 56 to 57 lbs. dressed weight to the hundred live weight. The highest range was for a few single extra beasts, fair to good, 55 to 56 lbs, estimated, brought 9 to 10c. ₱ lb. Dressed sides sold for 7¼@8c. ₱ lb.

The prices for the past five weeks were as follows:

WEEK ENDING	*Range.*	*Large Sales.*	*Aver.*
Mar. 18	8¼@11¼c.	9 @10 c.	9¼c.
Mar. 25	8¾@11¼c.	9¼@10¼c.	10 c.
Apr. 1	8 @11 c.	8¾@ 9½c.	9¼c.
Apr. 8	8 @11¼c.	9¼@ 9¾c.	9¾c.
Apr. 15	8 @11 c.	8¼@ 9¼c.	¾c.

Cows.—The demand has been dull, and the market has been devoid of interest. The best cows have reached $65 to $75, calf included; the run of the market is from $40 to $60, and at the close no change could be made in these quotations....**Calves.**—The fore part of the month this market was quite good, veals of more than ordinary quality being scarce and wanted. The increasing receipts weakened the business, and prices fell one cent per pound at one drop, ending still duller, and with downward tendency. Common to good veals fell to 5½ @ 6¼c. ₱ lb. live weight, on a very heavy market ... **Sheep and Lambs** have been lively through the month, except for heavy sheep, which are not now wanted, except for export. A brisk trade has been done at a range of $5.37½@$6.50 per 100 lbs. for unshorn sheep, and $4.50@$5.50 for clipped, which have been arriving for a month past, and are becoming plenty. Yearling lambs have brought 6¼@7c. ₱ lb., and spring lambs are in demand at $5@$8 per head for fair to prime. The market closed without change in these prices, but with a dull look forwards....**Swine.**—Live hogs have gone as low as 3¾c. ₱ lb., the heavy receipts having weighed down the market. The demand is unsteady, and 180-lb. hogs sold at a little advance before the close, bringing 4c. ₱ lb. City dressed were in good demand at 4¼@5c. ₱ lb., and market pigs at 5¼c. ₱ lb., dressed.

Prices of Feed.

Bran, per ton	$18.00@$20.00
Middlings, per ton	19.00@ 21.00
Ground Feed, per ton	15.00@ 21.00
Linseed-oil-cake, per ton	44.00@ 47.00
Cotton-seed-cake, per ton	25.50@ 40.00
Chandler's Scraps, per lb	3@ 4

Prices of Fertilizers.

No. 1. Peruv. Guano 10 p. ct. ammonia, standard, ₱ ton	$56.50
do. do. Lobos, do. do. do	47.50
do. do. guaranteed, ₱ ton, cargo F	56.00
do. do. rectified, per ton, 9.50 p. c.	60.00
do. do. do. do. 3.40 p. c.	31.00
Soluble Pacific Guano, ₱ ton	45.00
Excelsior Fertilizer Works, Fine Ground Raw Bone	55.00
Mapes' Complete Manure (Ville formula) p. 1,000 lbs	26.14
do. Spring Wheat Manure, ₱ 1,000 lbs.	25.00
do. Fruit and Vine Manure, do.	17.50
do. Bone, strictly pure, meal ....per ton.	42.00
do. do. do. extra fine.... do.	40.00
do. do. do. fine..... do.	38.00
do. do. do. medium..... do.	36.00
do. Lawn Top Dressing..... do.	60.00
do. Potato Manure, (Ville Formula)... do.	51.94
Stockbridge Corn Manure, per acre	20.00
" Potato do do	10.00
" Tobacco do do	50.00
" Rye do do	10.00
" Wheat do do	15.00
Bowker's Hill and Drill Fertilizer, per ton	45.00
Sulphate of Magnesia (35 to 60 per cent), per ton	22.50
Gypsum, Nova Scotia, ground, per ton	8.00
Nitrate of Potash (95 per cent.), per lb	9¼c.
Sulphate of Potash (actual potash 41 per cent) per lb	4 c.
do. do. (actual potash 27½ per cent) per lb	2 c.
German Potash Salts (actual potash 12 to 15 p. c. p. ton	$18.00
Muriate of Potash (actual potash 50 per cent), per lb	2½c.
Nitrate of Soda, per lb	4½c.@ 4¾c.
Sulphate of Ammonia (25 per cent.), per lb	4¾c.@ 5¼c.
Dried Blood or Dried Meat (ammonia 14 per cent) p. ton	$55

The Conn. Agr. Experiment Station, makes the following report (No. 7, April 9) of analyses of fertilizers manufactured by the Quinnipiac Fertilizer Company, of New Haven, the samples being taken on April 1, from lots as shipped to agents and purchasers: No. **86,** half dry fish scrap. No. **87,** fine ground fish. No. **88,** Superphosphate, guaranteeing 2½ per cent Nitrogen, 6 per cent of soluble and reverted Phosphoric Acid, and 1½ per cent of Potash. No. **89,** fish and potash, guaranteeing 3.7 per cent Nitrogen, 3 per cent soluble and reverted Phosphoric Acid, 2½ per cent Potash. No. **90,** Pine Island Guano, guaranteeing 4.1 per cent Nitrogen, 3½ per cent soluble and reverted Phosphoric Acid, and 2 per cent Potash:

No.	86	87	88	89	90
Nitrogen	4.32	6.55	3.08	3.84	5.00
Soluble Phos'c Acid	——	0.82	5.64	1.30	1.58
Reverted Phos'c Acid	——	——	1.15	2.04	2.92
Insoluble Phos'c Acid	4.88	5.40	2.46	1.58	1.54
Potash	——	——	1.82	3.07	2.74
Calculated Value	$19.79	$27.01	$33.38	$28 05	$35.36
Cost *	$30.00	$42.50	$40.00	$35.00	$42.50

* A discount from these prices made for cash.

Measurement of Corn-Ears.—"C. R. C.," Republic Co., Kansas.—To measure corn in the crib, reduce the size of the crib to cubic inches and divide this sum by 4,300. If the crib is square or right-angled, the reduction is easily made; if it is spreading from the bottom upwards, take the length, hight, and width in the center, or half way from floor to eaves, in inches and multiply all together. This gives cubical contents in inches. Then two bushels, or 4,300 cubic inches of ears will, under usual circumstances, give one bushel of shelled corn. This can easily be tested by measuring two bushels of ears and shelling them. The result will be cubic inches of ears to bushels of grain.

American Agriculturist for May 1st, surpasses itself, if possible, with its hundred or more useful articles and paragraphs, illustrated by some 70 original sketches and engravings. The Work of the Month in different departments is laid out, with multitudes of practical hints and directions. A variety of swindles are shown up, including the "Butter Compound." Alligator Plant," etc. Some of the leading articles are: Important Results of Farm Experiments; $1,000 Cottages, with plans and specifications; "Among the Farmers, by One of Them;" "Talks on Farm Crops," No. 18; Hints and Helps to Farmers, Labor-Saving Contrivances, with many engravings; Raising Ducks; Chapters on Sparrows, Corn Planting, The Catalpa and Its Uses, Poultry, Penguins, Care of Bees in May, etc.; New Conn. Dog Law, Grape Vines on Small Places, A Wisconsin Barn, Wire Trellis, numerous Household Topics, Youth and Children's Department and their Garden, etc., etc. Price, 15 cents; $1.60 a year. ORANGE JUDD COMPANY, Publishers, N. Y.

To EDITORS who have not time to read through and select articles, we suggest below some worthy of general circulation. Part of the most valuable articles, however, can not be copied for lack of the illustrations, such as the Bee Notes, page 169; Cottage Plans, page 172; Various Contrivances, page 176; Hints and Helps to Farmers, page 180; The Catalpa and Its Uses, page 181; Treatment of Grape Vines, page 182, etc.

[NOTE.—In answer to frequent inquiries, we repeat here that our engravings are mainly original, and executed by the best artists; the originals carefully preserved, only wax impressions being taken for electrotyping; and whenever desired, we supply new, fresh, sharp, ready-blocked electrotypes of most of these engravings, from the original sharp cuts, at one-fourth to one-third of the cost of producing them, if not to be duplicated or transferred to others, by those using them.]

Though each number of this journal is copyrighted, for special reasons, Editors are always invited to copy any desired articles, if they are simply credited to *American Agriculturist*. (The prefix *American* is important to us, as there are several "*Agriculturists*" whose credit we do not wish to appropriate, and in some cases we do not care to be responsible for their teachings.

Among the items in this paper, above referred to as worth copying, are:

Hints on Work for the Month.

Important and Profitable Farm Experiments, page 171.

The Excellent New Dog Law of Connecticut, which ought to be enacted in every State, page 178.

Improvement of Corn, page 180.

Diphtheria and Filth, page 169.

Butter Compound, 170.

Women's and Children's Shoes, page 184.

Peach Prospects, page 168.

Some items in "Among the Farmers," page 174.

Talks on Farm Crops, page 175.

Raising Ducks, page 177.

The English Sparrows, page 178.

Broad Tire Wheels, page 179.

Faith Rochester's Home Topics, pages 183-4.

Sundry short items, pages 167, 168, 193, 194.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of room elsewhere.

Publishers' Notices, Terms, etc.—The Annual Subscription Rates of the *American Agriculturist*, postage prepaid by the Publishers, are: One Copy, $1.60 a year; *Two* Copies, $3; *Three* Copies, $4.20 ($1.40 each); *Four* Copies, $5.20 ($1.30 each); *Five* to *Nine* Copies, $1.25 each; *Ten* to *Nineteen* Copies, $1.20 each; *Twenty* Copies and upwards, $1.10 each; Single Numbers, 15 cents, post-paid.—The above terms are for the United States and Territories, and British America. To the above add 14 cents extra per year for papers delivered by mail in N. Y. City, and for copies sent outside of the United States and British America, *except* to Africa, Brazil, British Honduras, the East Indies, and Mexico. For the last named five countries the extra charge is 38 cents per year, to cover extra postage; Single Numbers, 17 cents, post-paid.....**Remittances,** payable to Order of Orange Judd Company, may be sent in form of Checks or Drafts on N. Y. City Banks or Bankers; or P. O. Money Orders; or in Registered Letters, such letters to have the money enclosed in the presence of the Postmaster, and his receipt taken for it, and the postage and registering to be put on in stamps. Money remitted in any one of the above three methods is safe against loss. **Bound Volumes** from Vol. 16 to 36 inclusive, supplied at $2 each, or $2.30 if to be sent by mail. Sets of numbers sent to the office will be bound in our regular style for 75 cents (80 cents extra if to be returned by mail). Missing numbers for such volumes supplied at 12 cents each.—**Any Numbers** of the paper issued for 21 years past, sent post paid for 15 cents each; or *any* full year, sent unbound, for $1.60.....**Clubs** of Subscribers can be increased at any time, at the club rates, if new members begin at same date as original club.

Every German Cultivator and Laborer on the Farm, or in the Garden, OUGHT to have the German *American Agriculturist*, and thousands of *new* subscribers are taking it this year. It contains not only the Engravings and all the essential reading matter of the American edition, but an additional *Special German Department*, edited by the Hon. Frederick Münch, of Missouri, a skillful and successful cultivator and excellent writer. No other German Agricultural or Horticultural Journal in America has been so long issued; no other contains so much useful information and so many engravings. Germans are a *reading, thinking* people, and know how to make good use of what they read. Many Americans supply it to their German laborers and gardeners; all would find it pay to do so.—*Nothing else can compete with it in cheapness of price for the same amount of material, engravings, etc.*, because the expense of collecting and making these is largely borne by the American edition, and no separate office or machinery is required beyond German editors and the printers. Its terms are the same as the American edition, singly and in clubs; and clubs can be composed of subscribers for either edition in whole, or in part.—☞ *Please call the attention of your German neighbors* to this paper. It will do much to help new comers to a knowledge of the system and modes of culture used in this country.

A Microscope for Every Subscriber.—Every subscriber to the *American Agriculturist* for 1878, is entitled to receive *one* of the *American Agriculturist* Microscopes, delivered free anywhere in the United States or Territories, on remitting 60 cents; or for 40 cents if the Microscope be taken *at* the office (Our arrangement for delivering them by Express at reduced rates has expired). The invariable price to non-subscribers is $1.50, or $1.65 if sent pre-paid. Even without the paper, it is, at $1.65, far cheaper than any microscope of equal usefulness that was ever before offered. By new methods, and by making them on a scale twenty times greater than ever before attempted, the cost has been greatly reduced. These special advantages are reserved exclusively for the subscribers of this Journal for the present year; and by paying part of the cost themselves, the Publishers supply them at the nominal price above named.

Hundreds of Letters have been received since sending our April number to press, from Subscribers, expressing great satisfaction and pleasure in the use of the *American Agriculturist* Microscope. It could not be otherwise with any person who is acquainted with such instruments, or who, not being acquainted with them, will take a little pains to get familiar with the proper use of this one. To such it opens almost a new world of objects, and is a source of instruction as well as amusement, especially to the young. Although its continued distribution is a source of loss, we shall, for the present, continue the offer of these Microscopes, as hitherto, except the addition of 5 cents to the cost of delivery above named.—After our subscribers are supplied, they will probably be put into the regular trade at $1.50 each, which is far cheaper than any microscope of like value and usefulness has ever before been offered.

To Officers of State and County Fairs.—As the time is at hand when arrangements are to be made, and Premium Lists prepared for State, County, and other Agricultural, Horticultural, and Industrial Fairs, we would remind those who make up the schedules and prizes, that no more acceptable Premiums can be offered than some of the very useful and valuable Books for the Farm, Garden, and Household, or a year's subscription to the *American Agriculturist*. We invite correspondence from those who have these matters in charge. Premiums like those we suggest, have been offered in many cases, to the great satisfaction and benefit of those who secure them, and who place a greater value upon such permanent, useful keepsakes, than they would upon several times their cost in a money premium.

Crandall's "Chinese Blocks."—All children will remember Mr. C. M. Crandall with gratitude, as the man who has given them the means of unbounded delight. And now he comes again with a new "Block," combining the original Building Blocks with a Chinese Family, the various pieces being beautifully colored, and a single Set enabling its fortunate owner to build, without number, Chinese Houses, Palaces, Pagodas, etc., etc. See Third Cover Page.

Reliable Business Men, those who have both the *ability* and the *intention* to do what they promise, are the only ones invited to use the business-pages of this journal, and those in charge of that department are under positive instructions to admit no others at any price, and they try to live up to it, and generally do, though once in a while they may make a mistake—to err is human—but *this* seldom occurs. We could make a fortune in a single year, and supply the paper at lower rates, if the advertising pages were thrown open to those who gladly pay high prices, as they can afford to, because they give little for much. But we mean our advertising pages shall be a valuable source of *trustworthy* information to our readers.—When ordering from, or corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of this Journal. They will know what we expect, and what you expect of them as to prompt and fair treatment.

The Death of Clarkson Taber is announced as having occurred at his farm in Sterling, Kansas. The account is very meagre, and the date is not given, but we suppose it took place about the middle of April. Mr. Taber was born at Albion, Me., in 1822, and was educated at the Friends' School, at Providence, R. I. In his early life he was engaged in the nursery business, and he had an excellent knowledge of that branch of horticulture. He became connected with the *American Agriculturist* in those primitive days when one person could do all the mailing, attend to the advertising, besides making himself generally useful; later, he made up the cattle reports, and afterwards performed similar duties for the "N. Y. Tribune." Mr. Taber was a faithful, industrious worker; he was a consistent member of the Society of Friends, and was highly esteemed by all who knew him. To his old associates this unexpected news of his death brings sincere regret, but awakens none except pleasant remembrances of a genial intercourse of many years.

Coloring Butter.—As long as the demand exists for high-colored butter, and consumers will pay an extra price for it, so long dairymen will color their product. Some people love to believe that Jersey cows *always* yield very yellow butter. Ordinarily they do, but sometimes even the best Jersey butter is colored artificially. If butter is to be colored, it were well that it were well done; and it cannot be well done without a good coloring preparation. We have tried several preparations, for when our butter in the winter season lacks color, we do not hesitate to please our own taste as well as those to whom we sell, by giving it the right tinge artificially. Of the colorings we have used we prefer two; that prepared with oil, by Mrs. B. Smith, Philadelphia, and that of Wells, Richardson and Co., of Burlington, Vt., which is a popular liquid coloring prepared in a different manner. There probably are others as good perhaps, but these are good enough to produce a lemon or a golden yellow as may be desired.

Don't Pull out Loose Teeth.—As soon as a tooth appears a little loosened, there is always an itching, among young people especially, to get the thing out. While artificial teeth are made very perfect, and are exceedingly useful, any natural tooth that is not damaged so as to ache incurably, is worth a score of the best artificial dentures ever made, and great care should be taken to keep it in as long as possible. Some months ago the writer had two front teeth so loose that they could be readily moved back and forward more than their diameter, by a slight pressure with the finger. But by a little care not to use them on hard substances for a few days, and keeping them pressed into place with the teeth opposite, they settled back into their natural position, and are now serviceable, thus saving two ugly gaps, or the expense and annoyance of artificial ones, and the annoying mouth-plates. Recent experiments by Dr. Kingsley and others show that the teeth may be "moved along," may be made to change their position very greatly, so as to get a regular set of natural teeth out of one previously more irregular than a Virginia fence. In a case under our own observation, the upper jaw was full of teeth, and had two extra ones that grew in front of two others—real "tusks." Yet the dentist spread the roof of the mouth by ingenious plates, screws, etc., and actually moved the other teeth along, bringing the extra fellows into line, and now there is a *regular* row of useful

teeth, where formerly it seemed as if the young man (now in College) had got to wear through life a very uncouth, distorted set of dentals.

Books Upon Poultry Raising.—"W. G. L.," Ford Co., Ill. A very useful and cheap book upon poultry raising is "An Egg Farm, etc.," by H. H. Stoddard, who is a practical poultry breeder. It contains selections and illustrations from the back volumes of the *American Agriculturist* from articles written by Mr. Stoddard and those editors of the *American Agriculturist*, who have been largely and successfully engaged in raising poultry. It must not be expected that any book whatever can provide for every contingency and accident; judgment and common sense must be used when the directions given do not precisely meet any particular case. Only general rules can be given in books. Sent by mail in paper covers, 50c.; in cloth, 75c.

A Business Change.—Mr. W. Atlee Burpee has retired from the firm of Benson, Burpee & Co., 223 Church Street, Phila., dealers in seeds, grains, and live-stock. The business will be continued at same location, under the firm name of Benson, Maule & Co. W. Atlee Burpee & Co. will conduct a similar business at 221 Church Street, Phila. Mr. B. is an enterprising, intelligent business man, and deserves success.

A Hay Fork Carriage.—"H. D. M." The first necessity for the return of a MSS. is to send your post-office address. When a letter is dated only, and no place given, it is a clear impossibility to communicate by mail, although a stamp may be enclosed. Some people are very thoughtless in this regard, and blame us for what we can not possibly help. The drawing is received, and is only waiting for an opportunity to be published. It is not always possible to print any article the day or even month after it is received.

"Forestry and Its Needs," is the title of an address, delivered before the "American Forestry Association," at the meeting held at Washington in February last, by its President, Doct. John A. Warder. It is brief but comprehensive, and shows that much careful thought has been given to the needs of our "forestry,"—if we can be said to have any in the proper sense of the term. We read to the very next to the last page, giving assent as we went along—feeling that here is a forestry movement which is not pivoted upon, and does not revolve upon the central idea, that the Government must send some one to Europe to examine and report—but, alas, here was the same old story, somebody must go to Europe. The suggestion that immediately precedes this is an admirable one, and would accomplish much good, viz., to introduce some of the many educated and trained foresters so numerous abroad, to teach in our scientific schools.

The Trial of Steam Engines for farm uses, held at Syracuse last fall, under the direction of the N. Y. State Agricultural Society, was a very thorough one. Among the premiums then awarded was one of a gold-medal to B. W. Payne & Sons, Corning, N. Y., for the best engine in the Second Class, *i. e.*, under 6-horse power. All the vertical engines made at their establishment are provided with "Taber's Patent Automatic Cut-off Governor," which, it is claimed, allows of the best control over the movements of the engine.

Sewing Machines.—Over 20 years ago the *American Agriculturist* published the first popular description of "HOW SEWING IS DONE BY MACHINERY," showing by a variety of illustrative engravings just how the stitches were made by the leading machines, and setting the matter forth so plainly that ordinary persons could understand the whole process. This was in February, 1858. We have, from the first, recognized the importance of this labor-saving implement, and not only labor saving, but life and health-saving; and have many times urged every man to spare his companion the everlasting "*Stitch, stitch, stitch! Sewing at once with a double thread, A shroud as well as a shirt*," and advised selling an acre of land, if necessary, to secure this important aid in the household. Of course we have watched the progress of improvement, and have tried a majority of the machines brought out. So much by way of introduction to what we have to say of the New "Automatic" Machine of the WILLCOX & GIBBS COMPANY. One of these has been in use at home during three months past, by the same hands that have tested so many of the machines, from time to time spoken of in this Journal. It may be said in brief, that, all things considered, this is "The Best" one yet tried. Its elastic seam, easily fastened, and yet capable of removal when desired, is an excellent feature. It has sundry attachments, that work admirably, as the Hemmer, Tucker, Quilter, Ruffler, Braider, etc. It runs with wonderful ease and quietness. But *the* great improvement is the new "Automatic Tension," which is perfection itself. With this, the most inexperienced can sew the thinnest fabric as well as the thickest; and what is more, pass from one thickness directly to another, as often as desired, without changing the tension, and with the certainty of producing perfect work. Every lady who has used any machine and worried, and even cried, over getting the tension always right, will at once recognize the importance and value of such an improvement in sewing mechanism.

Relating to Shepherding.—"D. H.," Chicago, Ill. Stewart's "American Shepherd's Manual," gives full instruction for caring for sheep; all that is necessary in addition to what is there told, is some ordinary common sense, to apply it to differing circumstances. Kansas and Nebraska are good localities for keeping sheep. There a homestead can be bought cheaply, or taken on Government land for next to nothing, and for the present plenty of free pasturage can be procured. Probably the best plan would be to purchase 640 acres of cheap land from one of the railroads, and enter 160 acres of Government land, at $1.50 per acre, adjoining it. This would give 800 acres, which would furnish winter feeding for three or four thousand sheep, and summer pasture could be had on the range. Either native or half-bred sheep could be purchased in Colorado at $2 to $2.50 per head. There is no necessity to purchase more land at present than sufficient for winter pasture, as plenty of wild hay can be put up for one or two dollars a ton. Price, sent by mail from this office, $1.50.

German Millet.—"E. J. S.," Queenstown, Md. Millet can not be sown safely until the soil is warm. It thrives in warm weather. May and June are the months for sowing it. One to two pecks per acre will be sufficient seed.

Bean Planter.—"H. C. P.," Kinston, N. C. The Albany Corn Planter, made by R. H. Allen & Co., and illustrated in the *American Agriculturist*, April, 1877, plants beans as well as corn, and other seed. Any threshing machine will thresh beans, by putting a smooth plank in place of the concave, and running slowly.

Nebraska.—Mr. Leavitt Burnham, the new Land Commissioner of the Union Pacific Railroad Company, has for many years been a resident of Nebraska. He is familiar with the country, and those who contemplate moving westward would do well to consult him. We learn that there is an unprecedented emigration this spring to that portion of Nebraska through which the Union Pacific road runs.

Capons.—"N. F.," Picton Co., N. S.—A capon is an emasculated male of the ordinary fowl. The operation has the effect of greatly increasing the size of the bird and the tenderness and flavor of its flesh. It is very easily performed when one knows how. The instruments are kept for sale by H. H. Stoddard, of Hartford, Conn., who can also furnish directions for operating. It is one of those cases in which *seeing* the operation is of greater value than all the directions that can be printed.

"Economic Tree Planting" is the title of a pamphlet by B. G. Northup, LL. D., Superintendent of Public Schools in Connecticut. Dr. Northup is an enthusiastic advocate of village improvement, and has done much to organize "Village Improvement Associations," the good done by one of which, that of Litchfield, was described in Feb. last. The present work is a report to the State Board of Agriculture of his observations in Europe, on the economical aspect of tree planting, with added evidence of examples in this country. The work reaches us just at the moment of going to press, and we can at this time only briefly announce it. It will be supplied by the publishers of this Journal, and by mail for 25 cents.

Malt for Feed.—"J. A. McD.," Kings Co., P. E. I. Malt is eagerly eaten by all kinds of live stock, on account of its sweetness; but the result of many careful experiments has shown that the benefits derived from feeding it do not repay the trouble and cost in malting the grain. Every advantage from the malting may be gained by simply adding a little molasses to the fodder or grain, and this is much cheaper. In malting grain, there is a loss of substance, as well as a change of its form in germination, and this reduces the actual value of the grain, although it renders it more palatable.

Butter Table.—"H. K.," Blair Co., Pa. The butter table illustrated in March is not made for sale; any carpenter can make it from the description given. The moulds can also be made by any good mechanic. Most of the articles described and illustrated in the *Am. Agriculturist* are designed purposely for it, are unpatented, and are so simple and exactly described as to be easily made by any one who can use tools.

Sundry Humbugs.

We have often referred to the "Butter Compound," and the difficulty of getting direct information concerning it. This we consider one of the most pernicious of the swindles of the present day, as it is a fraud upon those who may use it, ignorantly and in good faith, and a fraud upon those who purchase, as butter, the stuff produced by its use. In view of its importance, we give in a separate article the results obtained by the Trustees of the "Mass. Society for the Improvement of Agriculture," and presume that they will in due time furnish the public the details in full.....Last month, we gave a considerable space to an account of the operations of a firm calling itself

"CLARK & CO., ADJUSTERS OF CLAIMS, ETC.,"

who pretended to have money to the credit of various parties, and who, to be sure that they were addressing the right parties, enclosed a slip containing a signature for identification. One would suppose, from the account there given, that the scheme had been completely squelched. But these things have as many heads as Hydra, and as many names as a confidence-man, and while as "Clark & Co., 1,267 Broadway" that head is cut off, it already appears in another form. Precisely such letters as the one quoted last month, from Clark & Co., —word for word—are being sent out right and left, but they are headed and signed, instead of "Clark & Co.," "J. C. Keys & Co.," and no longer from 1,267 Broadway, but are dated at "37 Bond St." Now 37 Bond street is the place where not long ago the celebrated firm of Russell & Co. were supposed to deliver those magnificent prizes of watches and jewelry from that "Decision at Last" Lottery Combination. Can it be that Russell & Co. have retired, or can one small number—37—hold two such firms as J. C. Keys & Co. and Russell & Co. at once? This last move more than confirms the opinion of that shrewd officer, Special Agent Sherrett, as quoted last month, that the Silver Mining Co., so flourishing last year, Russell & Co., and Clark & Co., were all schemes of Elias; evidently, Keys & Co. is but another *alias* of Elias. By the way, Keys & Co. do their business thoroughly, as we have two letters of the same date and exactly alike sent to the same person! Of course, when Keys & Co. are denied the use of the mails, as were Clark & Co., the check will be but temporary; as soon as some other name can be engraved on the letter-heads, the same thing will turn up in another form. Fortunately it is a scheme which will catch only those who are dishonest themselves....Circulars concerning a

WONDERFUL GOLD MINE,

are being circulated freely. They are sent far and near with an introductory note to the recipient which reads:

"Dear Sir—Returning from the mines, we met a gentleman in the cars from your locality, and asked him to give us the names of persons who might take an interest in mining. Therefore we send a prospectus, etc."

It is really astonishing how many people "we" met in the cars. The whole thing is "too thin"....We still receive inquiries concerning those parties whose circulars offer great inducements to invest in

STOCK OPERATIONS IN WALL STREET.

In all the many cases we have inquired into, the parties sending out these circulars are not members of the Stock Board, and they are not known at all, or are unfavorably known, among the regular dealers on the street. Our advice to every one who does not understand the business, is to keep out of the stock-market, whether in person or by proxy....There seems to be

A NEW CROP OF LOTTERIES,

at least, new in name, and we are often inquired of concerning them. We have very frequently given our opinion of lotteries, but as many new subscribers have been added since we have said anything about them, we state, in brief, that we are opposed to the whole of them, as wrong in principle and injurious to the community. Very few are honestly conducted, and if any are so, the chances are fearfully against the ticket holder. In most States the sale of lottery tickets is prohibited by law, and if, as they often are, tickets are sold in defiance of law, the purchaser is accessory to an illegal act. Never mind where the lottery is held, by what name it is called, or who give it countenance—let it alone. ....Every now and then the old story turns up in one form or another, that a farmer finds he has a note to pay

when he only thought he was signing an agreement or an order. Farmers should look out for those who are introducing new fanning mills, and propose to take the old one at a high price. The farmer signs an order for the new mill, and the agent gives a note for the price of the old one, "payable on delivery." The "order" turns out to be a Note which the giver can not avoid paying; it is needless to add that there is never any "delivery" of the old mill, as it is not called for....A set of chaps are offering in New England, clothing which they mysteriously hint is smuggled from Canada; it is offered very low. They are in no immediate want of the money, but will take the farmer's note; this, and the wonderfully low price of the clothing, often prove too tempting. The clothing turns out to be the poorest shoddy, but the note is a very good one, and must be paid.

"FARMERS, BE CAREFUL WHAT YOU SIGN,"

though often repeated, is an injunction still needed, to which may be added—never buy that which you do not need, no matter what the price may be....There is one man—his name it is Eldridge—who

WANTS TO FIND HIS UNCLE.

Said E. was in the Jewelry business, and failed; he found that his creditors would take everything, so to be ahead of them, he took Watches and Jewelry to the value of $3,000, and put them away in the vault of some "Safe Deposit Co." He wants to find his uncle, so that he, the uncle, can sell the stuff on shares, because, as E. says, "It would not do for me to attempt to sell them, as it might get me into trouble."—We should say that it would. The funny part of the matter is that Eldridge should have had so many uncles "who left Boston in the Sixth Massachusetts Regiment in the early part of the late war." There was his uncle Gray, his uncle Rusby, his uncle Claypole, his uncle Wilson, and he don't know how many more, who all went off in the Regiment, and never came back, and now their dutiful nephew is writing to New Jersey, Pennsylvania, Indiana, Ohio, and all around, to find an uncle to help sell that Jewelry, etc. It is the most remarkable case of disappearance of uncles on record....Inquiries come from various parts about

"THE WINTER GRAPE,"

though they are sometimes offered as the "Seedless," and again as the "Croton." The peddlers carry with them samples of the fruit, which, from the description sent us, is no doubt that of the imported Malaga grape, that is abundant in the markets in late winter and early spring. Of course, the vines sold will not bear such fruit, or anything like it.

"MEDICAL MATTERS"

present but little of novelty, indeed but one quite new has turned up in a long while, and that being a "Life Syrup," as a matter of course is good for everything—not an unusual claim for quack medicines. The chief interest attending this is the remarkable way in which it was discovered. It seems to be necessary that all these medicines should have a wonderful origin, and whenever the history of nostrums come to be written, it will be found that a vast amount of ingenuity has been displayed in inventing romantic stories as to their discovery. The favorite idea used to be trace their origin to some miserable, ignorant, and dirty savage, but this seems to have culminated with Eddie Eastman, who exhausted the subject; then the secret came from some old crone like Mother Noble, or some one picked up a bottle by the sea-shore, which contained the recipe, or the secret was revealed in a dream—in one way or another most of these medicines are provided with a history which shows them to be something beyond the common sorts of doctor's stuff. If this "Life Syrup" has no other merit, it was discovered in quite a novel manner, and for once we do not have the old Indian and other chaps over again. There was a "Doctor" and he belonged to the army (no regiment in particular); in 1864 he was ordered to join a detachment sent to Florida; there were 4,500 men (stationed nowhere in particular), but the climate was very hard on the men, as he says: "My patients were dying rapidly, and I was almost in despair." But one day he saw in the hospital (at the place aforesaid—Florida, you know), a form—yes, a "female form," in fact, a "small female form," who was going about from bed to bed, and giving each occupant a small amount

"OF A DARK LOOKING FLUID."

Instead of at once finding out what his patients had been dosed with, he was immediately ready to leave the poor fellows, and, upon the announcement that she was "Sister Mary," tramped off four miles through the woods to a log house, where a sisterhood of eight lived. (This was in Florida, but not in any place in particular). In short, they were the remnants of a once powerful religious order in France; driven by persecution, they came to the New World, where they could "die in peace and security." Hearing from some hunters of the "seclusion and quiet of this spot, determined to make it our future home." (That spot is in Florida). The medicine was "Life Syrup," the secret of which had been in their order "for hundreds of years"—of course "it is composed of various roots and herbs"—such stuff always is. But these good "sisters" did not want the secret to die with them—so the Doctor was taken to the garden and shown the "roots and 'arbs." Such stories all end in the same way. He is the only one who has the secret, and he continues to make the Life Syrup just as Sister Mary did. If you don't believe it you can inquire at that remnant of a great religious house that may be found—somewhere in Florida.

Wheat in Delaware and Maryland.—One who, for the first time, travels through the charming farming districts of Delaware and Maryland, will be surprised at the number and extent of the wheat fields. Randolph Peters, Esq., of Wilmington, Del., whose report on the peach crop is given elsewhere, adds a note, saying: "The wheat crop never at this season promised better than now, though it is not yet out of danger of damage by frosts."

The Death of Willard C. Flagg.—The pleasure derived from a visit made us, a short time ago, by Dr. E. Lewis Sturtevant, the accomplished editor of the "Scientific Farmer," was greatly marred by the fact that he brought us the intelligence of the death of Mr. Flagg, which had just reached him by telegraph. As we announced some months ago his most dangerous illness, and before the paper was mailed, we had a letter from Mr. F. in his usual genial tone, with no reference to sickness, we hoped that this sad news might prove an error also. But later intelligence states that he died at Moro, Madison Co., Ill., on the farm where he was born and has since lived. Mr. Flagg graduated with honor from Yale in 1850, and ever since has been, whether in writing, in working, or in legislating, contributing in a wonderfully varied manner to the promotion of agriculture and horticulture, pursuits to which his life was devoted—a life which was a constant refutation of the careless assertion that "a farmer has no need of education." Mr. Flagg's parents were from Vermont, which may account for his remarkable combination of Yankee quiet industry, with Western enterprise; he accomplished a wonderful amount of work, but was never in a hurry. He was active in the Legislature of his State in promoting schemes favorable to, and in opposing those adverse to, the interests of the farmer. But we can not enumerate the many positions in which he devoted himself to the service of his fellows; they were by no means confined to his own State, and in his case it may be said, with truth, that the loss is a national one. Mr. Flagg was ardently devoted to fruit culture, and was long the editor of that department in the "Prairie Farmer," and was the Western correspondent on rural matters for "Hearth and Home." When it became necessary to elect a Secretary for the Am. Pomological Society several years ago, Mr. Flagg was chosen, and he held that position until his death, which leaves a vacancy difficult to fill. Mr. Flagg was barely 49 years of age at the time of his decease.

Shell Marl.—We were about to write that we had three boxes without a clue to their source, but accuracy requires that we should say that we have the remains of three boxes which apparently started on their journey by mail, containing, to all appearances, shell marl. The only box to which we have any clue, is quite empty, save a little adhering dust. The other two are badly broken, but contain a few of the larger pieces, the rest having thoroughly dusted the contents of some mail bags. A few folds of stout "hardware paper" would be vastly safer than the poor fragile match and other boxes so often sent. We suppose they were forwaded to get our opinion as to their value; if, as in some cases, there are shells more or less whole, and the remainder mostly distinct fragments of shells, it is probable that it would pay to burn it. If the whole, when moist, is like clay, with no considerable proportion of shell visible even with a magnifier, though found under a muck bed, it may not be shell marl at all, and requires an analysis. When an analysis is expected, the expense should be provided for, as we know of no chemist who works for the fun of it; and we long ago packed away our laboratory apparatus, having no time to give to such examinations.

The Residence advertised on page 195 is a most desirable one in every respect, and it can be had on very low terms if applied for soon.

"High Farming Without Manure" is the very attractive title given to a course of "Six Lectures on Agriculture, delivered at the Experimental Farm at Vincennes (France), by Mr. George Ville." The writings of Ville have been subjected to much criticism, but that they possess much of value is admitted by those who do not accept all his views. In all such cases it is better to read what one says, rather than what another says that he says, which this translation of this course of his lectures allows to be done. They are published in a neat pamphlet of over 100 pages, by A. Williams & Co., the well known book house of Boston. That these lectures contain much of value is shown by the fact that they are "Published under the Direction of the Mass. Society for the Promotion of Agriculture," than which there could be no better endorsement. It can be had of the Orange Judd Company at the publishers price, 25c., sent by mail, post-paid.

The Peach Prospects.—Every year, in the month of March, or later, the peach buds get regularly killed (in the newspapers), but as this Spring they seemed to be killed a little deader than usual, we have endeavored to find out the facts of the case so far as the great peach region of Delaware, Maryland, and neighboring parts of Virginia is concerned. With this view we applied to Randolph Peters, Esq., of Wilmington, Del., who, from his position as the leading nurseryman of that vicinity, has a wide acquaintance with peach growers, and knows "by heart" almost every orchard in the country thereabouts. Mr. P., to whom we are indebted for similar information in former years, has taken a great deal of pains (for which our thanks), in getting the views of the leading orchardists. He sends us a sample of some of the letters he received in reply. Among the writers of these are: Col. Edward Wilkins, of Riverside, Kent Co., Md., who, if not the largest peach grower in the

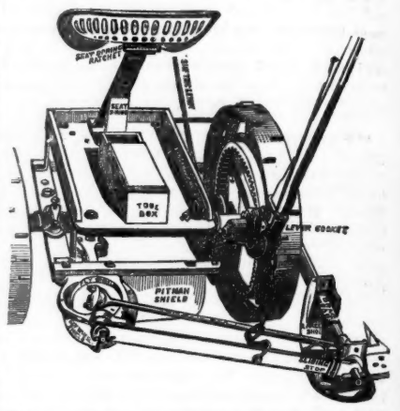


Fig. 1.—DETAILS OF CHAMPION MOWER.—(*See 1st p.*)

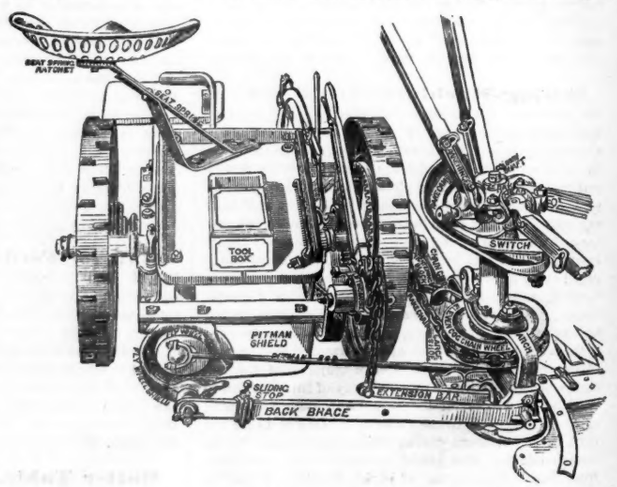


Fig. 2.—REAPING ATTACHMENT TO CHAMPION MOWER.—(*See 1st page.*)

world, comes very near it; Mr. R. S. Emory, of Chestertown, Md., who would be a great peach grower were he not a greater pear grower; Mr. T. W. Skirven, also of Maryland, and others from that State, with several from Delaware, including Mr. R. M. Cooper, a large grower in southern Deleware. Besides this, Mr. Peters has personally visited and made careful examination in many of the large orchards, and is better able to form an accurate opinion thereon, than, probably, any other person. The cold snap, to which the wide destruction is attributed, occurred on March 27th, when the mercury went down to 16°. At this time the trees in many parts of the peninsula were coming into bloom very freely; fortunately it was then and had been for nearly two weeks, exceedingly dry, a condition which Mr. P. thinks very favorable for the trees. He finds that in many localities, especially in the lower Eastern Shore of Maryland, and southern part of Delaware, the finer varieties of yellow peaches, such as Crawford's Early and Late, Reeves' Favorite, Susquehanna, and others, are badly damaged, while the white-fleshed varieties are but little injured. In the more northern localities the damage is not extensive. The foregoing is condensed from Mr. Peters' very full report, in which he sums up his own observations and the information he has received from others, by saying: "The prospect now is that we shall have more peaches than can be profitably shipped—provided, of course, that nothing happens to them after this date." The crops of all other fruits, including the small fruits, promise to be unusually fine.

Basket Items continued on page 193.

Between New Zealand and New York.

A large share of our correspondents in this country request us "not to give their names" in the replies in "Our Basket." Such a request seems strange, coming from New Zealand, yet there is quite as much reason for it, if not more, as in some districts at home. It implies that the *American Agriculturist* is so generally read in the writer's neighborhood, that every one will know that he has written. Many try all possible methods to get their names in print, while the majority prefer not to see it; then persons do not like to have their neighbors know that they have written anywhere for information, especially to a paper. The fact is, this paper has so large a circulation in the British Colonies generally, that it would astonish the reader should we give the figures, while the numbers, and their constant and rapid increase in New Zealand and Australia, are a wonder to the publishers, who are generally not astonished at anything in the way of circulation. We have our own notions as to the reason for our large circulation in these colonies, obtained without effort, and increasing by its own momentum; but we will not give them now. Suffice it to say that we are exceedingly glad to find a welcome among the wide-awake enterprising farmers and others in those colonies—for they were not settled by those who could not stay at home, and we read with no little satisfaction, in a recent letter, that there was not a farm-house in a certain district, naming it, and giving its extent, at which the *American Agriculturist* was not taken. In view of all this, we have been surprised that so few questions came from those colonies; with the exception of some, which, from their nature, required a reply by letter, they have been surprisingly few. We are glad of our present correspondent's, "L. W.'s," letter, as, besides allowing us to be of use to other New Zealanders in our reply, it permits us to say to him and others there, and in the other colonies, that he has not "taken too much liberty in addressing this note to you" (us), and that we welcome him and all others with their questions, assuring them that they will be treated "on the terms of the most favored nations," including that called the "Universal Yankee." We do not promise to answer *every one*—that is simply impossible—for we are often asked to answer the unanswerable—but we will so far as we can, so soon as we can, reply, if we can. We are glad to see that our friend asks for a reply in "Our Basket," as that shows him to feel at home in "the family," and accept that friendly relation which we desire to encourage. With this, for us, unusually long preface, but as it will have to be shared by thousands besides himself, will not leave him so very much, we will to the business of his note. He asks 1st. "By what means are small sums of money sent—*i. e.*, sums less than £1 sterling—between New Zealand and New York?" ....2d. "What is book postage from New York to this colony?"....3d. "Is there any duty on agricultural machinery made in the U. S. leaving New York to come to New Zealand, and if so, how much?"... 4th. "I have applied to shipping agents to learn the R. R. freight of goods from New York to San Francisco, but can get no information."—*Answers.*—1st. Money Order on London, or Draft... 2nd. 4c. for 4 oz. or fractional part; if 4½ to 8 ounces, 8 cts....3rd. No duty on Agricultural machinery, simply a clearance fee through the Custom House.... 4th. $2.50 to $3.00 per 100 lbs. on agricultural implements, the rates changing nearly every month.

Diphtheria and Filth.

Not long ago there occurred at Newport, R. I., the deaths of six persons in a family of eight, within fifteen days, all dying of malignant diphtheria. So remarkable an invasion of a dangerous disease naturally aroused the attention of the authorities, and the Mayor of Newport, properly employed Col. Geo. E. Waring, Jr., as Sanitary Engineer, to examine and report upon the condition of the premises. From this report we learn that the cottage is healthfully situated, with a cellar under all of the main portion, but there is a small addition, one story high, outside of the main-foundation; this is used as a rear entrance, and contains a sink and a water-closet; and is only separated from the rest of the house by a thin board partition. The sink, in frequent use, had an imperfect trap, and this and the water-closet emptied into a cesspool which had not been cleaned out for several years. All of this was bad enough, but this addition, or scullery, was raised upon brick piers, about two feet above the surface of the ground, with the space beneath closely boarded. In this space was the leaden pipe from the water closet, connecting with an earthenware pipe leading to the cesspool. Sea-weed had been at some time used around these pipes to keep them from freezing. The examination showed that, through some cause, whether by frost, corrosion, or the gnawing of rats, the lower bend of the leaden pipe, leading from the water-closet, and which was intended to serve as a trap, had broken through, and the deposits of the water-closet, instead of being carried off, in good part oozed through the hole in the pipe, and spread themselves over the soil and sea-weed, under this addition, for the extent of a square yard or more. How this state of affairs could have existed and not aroused attention, it is not necessary to discuss.—This is what was found; six children are dead, and it is no stretch of the probabilities to connect the one with the other. It is not offensive matter of this kind alone that is to be found near houses, in both city and country. Many a house with a fine front yard has a faulty kitchen drain. Nor is diphtheria the only disease that is favored by such conditions; typhoid and other fevers may be directly traced to the want of proper care in carrying off the wastes of the house—too often country-houses. The case of this Newport family is a distressing one, but if it will arouse a general attention, all over the country, to this matter of house draining, and this shall lead to remedying all defects in the disposal of the waste materials, the calamity will not have been in vain.

Bee Notes for May.

BY L. C. ROOT, MOHAWK, N. Y.

As the spring promises to be unusually early, in this latitude, at least, bees will undoubtedly be placed upon their summer stands during April.

The work for the present month is to secure as rapid breeding as possible, that all swarms may become populous. Be sure that each swarm has a good laying queen. With the movable comb-hive, this may be readily ascertained by lifting out a frame, when, if eggs are found in the cells, it is satisfactory proof that the swarm has a queen. With the ordinary box-hive it is more difficult to make this examination, yet with the use of the smoker, it may usually be done. Turn the hive you desire to examine, bottom up. Spread the combs a little apart at the center of the hive, and direct the smoke from the smoker to the exact point you desire to examine, thus clearing it of bees. If cells of sealed brood can be seen, it indicates that the queen is present. If sufficient honey is not gathered to continue breeding, sugar, syrup, or diluted honey, should be furnished for the purpose. If weak or queenless swarms are found, they should be united. Often two weak swarms may be united, making one good one, when both would be lost, if left separate. In uniting swarms, the smoker should be used freely, that all bees may become thoroughly demoralized. If sufficient smoke is used, there is usually little danger of their stinging each other.

Fig. 1.—SMOKER.

Smokers.

The importance of some efficient mode of applying smoke in handling bees, is admitted by all practical beekeepers; while the Quinby Smoker, which has been described in these columns, has proved successful, there were some deficiencies in it, which experience has remedied. During the past winter it has been much improved, so that it operates most perfectly. Figure 1 gives an accurate idea of what we call the *New Quinby Smoker*.

Section Boxes.

In Notes for March, 1877, I described a desirable form of the two-comb honey-box. The most popular box at present, in most markets, is a single-comb, or section-box. The one I use is made of white basswood, as follows:—Cut two pieces 5¼-in. long, 2 in. wide, and ⅛-in. thick, and two pieces 5 in. long, 1¾ in. wide, and ⅛-in. thick. Nail them together, as shown in figure 2, with ⅞-in. cigar-box nails. This makes a box 5¼ in. square outside. The two wide pieces project over the narrower ones ⅛-in. on each side, giving room for the glass to rest on the narrow pieces. They should not be glazed until after they are filled. It will be seen that, by placing two or more boxes together, that there will be an opening ¼-in. wide between the boxes, where the bees may enter. A temporary separator, made of tin, or thin wood, should be placed between the boxes while they are being filled, to secure straight combs. A space ⅜-in. wide should be left at the top and bottom of the separator to allow the bees to pass from one box to another, or they may be cut ⅜-in. smaller, on all sides, and attached to the sides of the box, by narrow strips of tin, as shown in figure 3. The boxes may be arranged in a clamp, as shown in figure 4, if used on the top of the frames, and if placed at the sides of the combs, they may be arranged in frames, as indicated in figure 5. The separators should be on the side of the box next the combs, and the other side closed with a close-fitting division-board, or glass. Each box should contain a guide-comb, as shown in figure 2. This should be fastened in with white glue.

Fig. 2.—BOX.

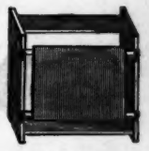


Fig. 3.—BOX.

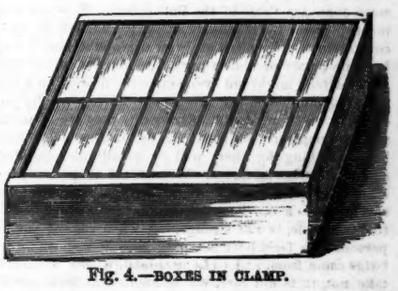


Fig. 4.—BOXES IN CLAMP.

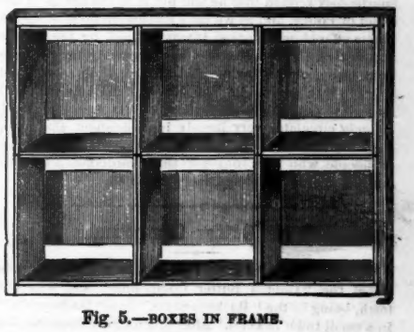


Fig 5.—BOXES IN FRAME.

Weight of Bees.

No. 1 consumed during March, 1 lb.; No. 2. 2¾ lbs.; No. 3, 3¾ lbs.; No. 4, which was out-of-doors, had been robbing, and had not lost any in weight.

A Small Street Swindle.—The "Alligator Plant."—Those traversing the New York streets during April, saw at the corners of the streets, near the ferries, and at other central places, overgrown boys and men, each with a pile of rough-looking sticks, calling out, "Here they are; a few more left. The genuine *Alligator Plant* from Florida. You have only to put it in water, and in a week it will be covered with beautiful flowers like roses. Only a few left! Who takes the next at 25 cents," (the price later was 10c., 5c., or less.) These sticks or twigs, one to three feet long, were uncouth enough in appearance to have come from the alligator swamps of Florida, but they only came from the near-by swamps of New Jersey. They were the small branches of the common "Liquidambar," or "Sweet

Gum" (*Liquidambar styraciflua*), common enough in New Jersey, and still to be found in the few remaining pieces of woods in the upper part of the city itself. It is a peculiarity of this tree that its young branches bear corky wings, often as broad as the diameter of the stem itself. The engraving, much reduced in size, shows the appearance of a bit of one of these "Alligator Plants." Many cart-loads of them have been sold in the city, and a large lot had been sent to Philadelphia. The sale began at 25 cents each, but the market closed lower, "in favor of purchasers," as the reporters have it. That large quantities have been sold, is shown by seeing the branches placed in water in the windows of restaurants, barber's shops, and such places, as well as by the number of people one meets carefully carrying their "Alligator Plants" home. To those who do not

TWIG OF THE SO-CALLED "ALLIGATOR PLANT."

know the tree we may say that, as to habit and foliage, which is star-shaped, it is one of the most beautiful of our native forest trees, but the flowers are no more like roses than are those of the Button-ball. They are very inconspicuous, the staminate or sterile flowers in little conical clusters, the pistillate in small globular heads; they have no petals or showy parts, and one unfamiliar with such matters, might not even notice the flowers on a tree in full bloom. Whether these poor flowers will be produced in water, we doubt. At any rate they are so unlike what are popularly known as *flowers*, that those who have been watching for them will be greatly disappointed, should they be produced. We noticed this "Alligator Plant" swindle when it began with a single vender, several years ago. That these branches should be sold to city people, is not strange, but when we see several persons on a ferry boat going to New Jersey, where the twigs came from, and to Long Island, where, if we mistake not, it is not rare, we wonder what these grown men have been doing with their eyes all these years, not to know the branches of the "Bilsted," the name often given to it in New Jersey and around New York. Becoming disgusted with the extent of the swindle, which, though small upon each person, was very large in the aggregate, we wrote a full explanation to Mayor Ely, who courteously replied that he had put it in the hands of the Chief of Police, and as we have since seen no more of the plants offered, we suppose it was stopped by the proper authorities. Those who may be disposed to try the sale next spring are hereby notified that we shall be on hand to "nip it in the bud." The Mayor of Philadelphia will do well to note this item, for though the *American Agriculturist* circulates very largely in and about that city, there are there, as here, still some hundreds of thousands of people who have not got the guardianship of this Journal against humbugs, large andsmall.

That Butter Compound.

We knew it several years ago. It was in Ohio, and was called the "Golden Butter Compound," and was put forth, being in the "Buckeye State," by a "Buckeye Co." in a small town in Ohio. After much circumlocution, we obtained a sample, but not in such a manner that we could trace it direct to any particular person or "Co." Just then it turned up in Hartford, Conn., and we thought we were sure of it. The friend who kindly undertook to "interview" the "Butter Compound" chap was very faithful to his task; he went to the place and found an office "with a hole in the door" for letters, but our friend could never find the "Butter Compound" chap in. After a while, the "Butter Compound" turned up in Massachusetts. Then we said to ourselves, "the chap has reached his jumping-off place. He is where they don't stand any such nonsense. He is in the land of 'Milch-Cows and Dairy-Farming,' where butter, at less than $1 a pound, has no sort of chance, beside the gilt-edged,'" and we were sure that that one offering to produce the "best of butter," and that at "a cost per pound never exceeding four cents," would either be suddenly squelched, or companies would be formed on State St., only less rapidly than they were in the days of the Lake Superior mining times, and this butter-business be put upon a regular square-toed basis. But we heard of no movement in Boston to make butter "at a cost per pound which never exceeds but four cents," and supply the world, nor did we hear of any movement to show up the matter. Knowing that the gentlemen of the "Mass. State Board of Agriculture," and those of the "Mass. Society for the Promotion of Agriculture" were very much in earnest in all that relates to the agriculture of their State, we made an appeal to these bodies, through the *American Agriculturist*, in all earnestness, to look into the matter, as we knew, better than they, what mischief was being wrought by this offer of the "Butter Compound" from South Framingham, "right under their noses," so to speak. Before these bodies were heard from, an Agricultural Editor from Boston made us a call, and we asked him why this "Butter Compound" business was allowed in Massachusetts and —of all places in the world—in the vicinity of Boston. This gentleman informed us that all their knowledge of the matter was obtained from the *American Agriculturist*, and that these South Framingham circulars did not "circulate" around home. He had never seen one, though living within a few miles of the place whence they are issued, while we had them by scores. We certainly can not blame the associations above referred to for not before acting in the matter, when a gentleman prominent on the agricultural press of Boston had never seen one of these "Butter Compound" circulars, until we gave him one! Recently we have heard that the Trustees of the "Mass. Society for the Promotion of Agriculture" have taken action in the matter. They have procured samples of the "Butter Compound," and have had analyses made by some of the chemists of Boston and vicinity. The analyses show the "Compound" to consist mainly of "Common Salt," "Burnt Alum," and "Sulphate of Soda," and perhaps small quantities of other salts, of little consequence. The important constituent is the alum, well known for its ability to curdle milk, but through the ignorance of the "Compound"-makers, the alum, in the samples tested, was *over-burnt* and thus made nearly insoluble. Some of the gentlemen interested in the matter, made a trial of the Butter Compound, "according to the directions." We do not know what their directions were, but infer that they were essentially those sent out by the Ohio "Buckeye Company," which are as follows:

DIRECTIONS FOR USING COMPOUND.

Take a pint of fresh unskimmed milk, and as much of the Compound as you can heap on a nickle cent, and thoroughly mix the milk and Compound together, in the churn; add to this one pound of soft butter, and churn until the whole mass has come to butter. If everything is of right temperature the butter should come in from one to two minutes, sometimes it takes a little longer. If you desire to give the butter a color take a small quantity of annotta and dissolve in hot melted butter; a teaspoonful of this will be sufficient to color two pounds of butter. The juice of carrot may be used, and is an excellent coloring matter. The yolk of an egg is good, but butter colored with it will not keep sweet so long.—Be sure to add salt before churning. Make the butter into roll without working. These proportions will make two pounds of butter, the extra pound costing about five cents. By increasing the proportions any quantity can be made at a time. The cream butter used should always be made pliable so the dasher will go through it easily; the milk should be lukewarm, same as if just from the cow. Churn should always be scalded and warm enough to prevent chilling the milk. To make a small quantity a small churn should be used. After churning put the butter away and let it get hard, and it will keep as long, and be as good, as pure cream butter. If you do not understand making butter, get some one who knows how, to test it for you, and you will find the Compound to work like a charm. The butter being just as good without being colored, it is not essential to use coloring matter except to make it look better.

The gentlemen who made the trial—and who are well known as practical dairymen—followed the instructions carefully. They took the requisite quantity, 1 pound of butter, the pint of milk, the required quantity, "enough to lie on a nickle cent," of the Compound, and churned according to directions. When they had gone through with it all and worked the butter in the usual way, they had as a result just *one pound of Butter!*

As already stated, the analyses showed that the alum had been so overburned, as to be insoluble. Had the alum been properly "burned"—the water of crystallization merely driven off—the alum would have been soluble and would have coagulated the milk and made what almost every housekeeper knows as an "alum curd."

Now what does all this "Butter Compound" amount to? Simply this, when made as it is intended to be, it is burnt alum and salt. What does it produce, when used according to directions?—Butter—genuine butter—"cream butter," the directions say—as if there could be any other! is swashed about in a churn with milk, to which this burnt alum stuff is added. The alum will, of course, curdle whatever is coagulable in the milk, and this *curd*, or incipient cheese, is mixed up with the real butter, to increase its weight. At the end you have butter with some very poor cheese mixed through it, or some very poor cheese made very greasy with real butter.—"You pays your money, and takes your choice." The whole thing is one of the very worst forms of fraud, and the gentlemen of the "Board of Trustees of the Mass. Society for the Promotion of Agriculture" are entitled to the thanks of the agricultural community of the whole country for what they have done in exposing this very mean fraud upon farmers. Now let them prosecute the South Framingham concern for obtaining money under false pretenses—for, sure, their fraud don't work—the *alum*, Jones, is *burnt too much*—and shut that thing up.

P. S.—Since the above was in type, we learn from good authority, that a complaint has been made to the Post-Office Department as to Jones & Co., whose business is by no means confined to the "Butter Compound."

Hay-making Machinery.

There is no more profitable expenditure of capital in agriculture than that for labor-saving machinery, and there is no more useful machine for the relief of human labor than the mower. As a matter of calculation it is easy to show that, where only 10 acres of grass is to be cut, it will pay to have a mowing-machine, hay-rake, and horse-fork. With regard to mowers, we have from time to time given the results of our experience with different machines. While old favorites are still excellent and have their good points, new improvements are constantly coming out. We now record the experience of a careful test of the Champion mower, formerly mentioned as the Haymaker or the Champion Hay-maker. This machine, being unlike any other, and possessing a novel motive apparatus, deserved a thorough trial. A machine was put through every possible test last season, both personally by the writer, and by several neighboring farmers, during a lengthened season of hay-making, with the result that it was found excellent in all circumstances. The draft is light, the ease with which it works, and the noiselessness of its motion are perfect; the knife will run at any angle, and the bar may be lifted perpendicularly, while the machine is operating, so as to pass a tree closely without putting it out of gear. It will start in the grass with ease; it will cut low or high, or take up lodged grass; the knife may be raised at either end or altogether, from an inch to a foot, so as to pass over stones or obstructions, while still cutting. There are no gears; no pitman; the only two cogwheels used are enclosed and safe from dirt; there is therefore no rattle, and the risk of breakage is reduced to a

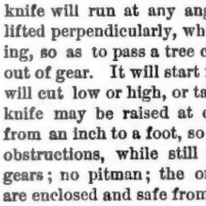


Fig. 1.—FORK OPEN.

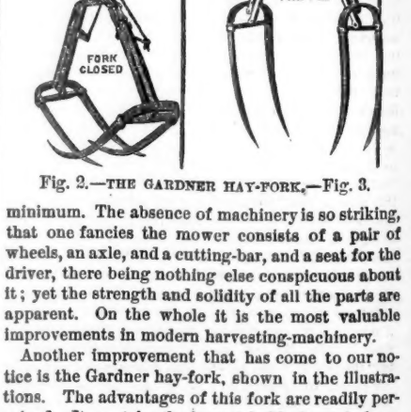


Fig. 2.—THE GARDNER HAY-FORK.—Fig. 3.

minimum. The absence of machinery is so striking, that one fancies the mower consists of a pair of wheels, an axle, and a cutting-bar, and a seat for the driver, there being nothing else conspicuous about it; yet the strength and solidity of all the parts are apparent. On the whole it is the most valuable improvements in modern harvesting-machinery.

Another improvement that has come to our notice is the Gardner hay-fork, shown in the illustrations. The advantages of this fork are readily perceived. It can take the largest hold of any fork we know. (See fig. 1.) It can be used with hay, straw, grain, corn-fodder, manure, or short straw, such as buckwheat or clover-seed straw. When closed, as seen at figure 2, the load is safely gripped, and the arrangement of the draft-rope and carrier is such that it cannot be tripped without design. Fig. 3 shows the position of the fork when tripped. The fork, when it ascends, is caught and held in the car, and relieves the draft-rope from all strain or weight. This apparatus is the invention of an ingenious farmer of Orange County, New York.

Experiments with Potatoes, Beans, and Rutabagas, on Farm of Maine State College, at Orono, by Mr. G. W. Lufkin.

Soil: Sandy loam, quite stony, well drained. *Previous Treatment:* In pasture previous to 1875, then summer-tilled; in 1876, had stable-manure, four cords per acre; crop, mixture of wheat, oats, and barley; yield, 20 bushels per acre. *Size of Plots:* The whole experimental area was 2½ rods long, and a little under 4 rods wide. This was divided lengthwise into strips 3 feet wide, each of which served for one row of plants. Alternate strips were manured, and served for the experiments, the intervening ones being left unmanured. The area was cross-divided into 3 equal divisions, each 7⅓ rods long. Division I. had Potatoes, II. Beans, and III. Rutabagas. Each experimental plot was therefore 7⅓ rds.×3 ft., one one-hundred-and-twentieth of an acre. *Amounts of Fertilizers:* 800 lbs. per acre. *Application of Fertilizers:* A single shallow drill was made lengthwise through each strip, the fertilizers strewn therein and mixed with the soil. *Seed put in:* June 9. Potatoes, cut with two eyes on a piece and dropped one in a place at intervals of a foot; Beans, the "Yellow-eyed," 4 in a hill, hills 1 foot apart; Turnips sown with hand seed-drill. *Weather:* June and July dry, August wet. *Harvested:* Potatoes, Sept. 8; Beans, Sept. 14, poor crop; Rutabagas, Oct. 5, very good crop. *Costs and Valuations:* The cost of fertilizers includes price in New York or Boston, plus $5.00 per ton for freight and $2.00 per ton for applying. The potatoes are estimated at 75 cts. per bushel of 60 lbs.; beans at $2.75 per bushel of 67 lbs.; rutabagas at 25cts. per [measured] bushel.

No. of Plot.	1	2	3	4	5	6	7	8	9	10	11
	FERTILIZERS FROM EXPERIMENT STATION.						COMMERCIAL FERTILIZERS.				
Kind of Fertilizer.	*Dried Blood I.*	*Superphosphate II.*	*Potash Salt III.*	*Mixture I+II.*	*Mixture I+II+III.*	*Plaster*[1]	*Kainit*[2]	Superphosphates, "Ammoniated."[3]			*No Manure.*
								Bradley's.	*Cumberland.*	*R. & W.*[4]	
Important Ingredients.*	*Nitrogen N.*	*Phos. Acid P_2O_5*	*Potash K_2O*	*P_2O_5 +N*	*P_2O_5 +N+K_2O.*		*Potash, etc.*	*P_2O_5 +N.*	*P_2O_5 +N.*	*P_2O_5 +N.*	
I.—POTATOES.											
Yield, Per plot.	61 lbs. 8 oz.	86 lbs.	52 lbs.	79 lbs. 12 oz.	77 lbs.	56 lbs. 2 oz.	36 lbs. 12 oz.	82 lbs. 8 oz.	79 lbs.	63 lbs.	28 lbs. 8 oz.
Increase,† Per plot.	33 lbs.	57 lbs. 8 oz.	23 lbs. 8 oz.	51 lbs. 4 oz.	48 lbs. 8 oz.	27 lbs. 10 oz.	8 lbs. 4 oz.	54 lbs.	50 lbs. 8 oz.	34 lbs. 8 oz.	.....
Value of Increase, Per acre.	$49.50.	$86.40.	$35.10.	$76.80.	$72.80.	$40.78.	$12.80.	$81.00.	$75.90.	$51.90.	.....
Cost of Fertilizer, Per acre.	20.00.	21.00.	26.00.	21.50.	22.33.	6.00.	18.00.	22.00.	22.00.	22.00.	.....
Gain (or Loss), Per acre.	$29.50.	$65.40.	$9.10.	$55.30.	$50.47.	$34.78.	$5.00.	$59.00.	$53.90.	$29.90.	.....
II.—BEANS.											
Yield, Per plot.	1 lb. 10 oz.	9 lbs. 10 oz.	2 lbs. 2 oz.	8 lbs. 2 oz.	6 lbs. 8 oz.	6 lbs. 2 oz.	4 lbs. 10 oz.	8 lbs. 6 oz.	8 lbs. 6 oz.	8 lbs. 12 oz.	4 lbs. 10 oz.
Increase,† Per plot.	3 lbs.	5 lbs.	2 lbs. 8 oz.	3 lbs. 8 oz.	1 lb. 14 oz.	1 lb. 8 oz.	.....	3 lbs. 12 oz.	3 lbs. 12 oz.	4 lbs. 2 oz.	.....
Value of Increase, Per acre.	Loss.	$25.87.	Loss.	$18.11.	$9.70.	$7.76.	.....	$19.40.	$19.40.	$21.34.	.....
Cost of Fertilizer, Per acre.	$20.00.	21.00.	$26.00.	21.50.	22.33.	6.76.	$18.00.	22.00.	22.00.	22.00.	.....
Gain (or Loss), Per acre.	Loss.	$4.87.	Loss.	$3.39.	$12.63.	$1.00.	Loss.	$2.60.	$2.60.	$0.66.	.....
III.—RUTABAGAS.											
Yield, Per plot.	(5)	3 bu. ½ pk.	(5)	4 bu. 1 pk.	4 bu. 1 pk.	2 bu. ½ pk.	2 bu. 3 pk.	3 bu. 3 pk.	3 bu. 2 pk.	2 bu. 2 pk.	3 pk.
Increase,† Per plot.	.....	2 bu. 1½ pk.	.....	3 bu. 2 pk.	3 bu. 2 pk.	1 bu. 1½ pk.	2 bu.	3 bu.	2 bu. 3 pk.	1 bu. 3 pk.	.....
Value of Increase, Per acre.	.....	$71.25.	.....	$105.00.	$105.00.	$48.75.	$60.00.	$90.00.	$82.50.	$52.50.	.....
Cost of Fertilizer, Per acre.	.....	21.00.	.....	21.50.	22.33.	6.00.	18.00.	22.00.	22.00.	22.00.	.....
Gain (or Loss), Per acre.	.....	$50.25.	.....	$83.50.	$82.67.	$42.75.	$42 00.	$68.00.	$60.50.	$30.50.	.....

* That is the most valuable fertilizing ingredients. † Increase (or loss) as compared with unmanured plots. 1. Plaster consists mainly of sulphuric acid and lime. 2. Kainit contains about 12½ per cent "actual potash;" the bulk is made up of common salt and magnesium compounds. 3. These contained probably 9 to 12 per cent of available phosphoric acid and 2 to 3 per cent of nitrogen. 4. Rafferty and Williams'. 5. Plants grew well until the middle of July, when they died.

Science Applied to Farming.—XLI.

More about Farm Experiments with Fertilizers.

How the "Maine State College of Agriculture and Mechanic Arts," is teaching its students in agriculture in the field as well as the class-room, and helping them to teach it to the farmers of their State also, is shown by a series of experiments, made last season by a student, Mr, Lufkin, under the direction of Prof. J. R. Farrington, of whose good doings I have had occasion to speak before.

The report fairly bristles with points of practical importance. Let me ask the reader to study the descriptions and figures carefully, referring to the article in the April *American Agriculturist*, for explanations about fertilizers and technical terms, and to note: (1), In these experiments, potash salts, alone, did little apparent good, and fell far short of paying their cost. Among the crops most apt to be helped by potash, are grass, potatoes, roots, and the leguminous crops, which include beans. None of these got any considerable good from the potash here. Mr. Farrington has had similar experience with kainit, before, and found leached ashes as good as unleached. (2), Phosphoric acid helped the crops in every case. The best yield of each crop, potatoes, turnips, and beans, was with phosphoric acid, alone or with nitrogen. (3), The only case where dried blood alone seemed of any use, was with potatoes; but with superphosphates it evidently increased the crop in several cases. (4), Taking all in all, as tested by the crops and fertilizers named, the chief need of this soil seems to be phosphoric acid, and next nitrogen. In its present condition it does not call for potash.

Artificial Fertilizers bring Profit on some Soils and Crops, but Loss on others.

(5), As indicated by the experiments, this is one of the soils on which artificial fertilizers of the right kinds, and with the right crops, can be used with great profit. It is what the Germans term a "thankful" soil. Weak of itself, with a very little help it brings good crops. On the supposition that the single plots without manure were fair samples of the whole, according to Mr. Lufkin's figures, the nitrogenous superphosphates gave, with potatoes and turnips, a gain of from $50 to $80 per acre. With beans, on the contrary, there was almost uniformly a loss. Mr. Lawes, of England, says, as the result of 30 years' experimenting and practice with fertilizers, "it is not advisable to sow artificial manure with beans, peas, tares, or other leguminous plants. Corn, [*i. e.*, grain and root crops,] will take all the artificial manure which the farmer can afford to pay for." (6), The indirect action of the fertilizers evidently counts for a good deal here. The yield seemed to be increased by almost anything, and in a way that can hardly be accounted for by the direct supply of plant-food.

This is certainly a very creditable experiment. Still it has some defects. These, however, I do not regret. As a wise old Roman writer on agriculture, Columella, says, "There is no occupation in which we cannot learn from our errors." (7), One defect is the lack of unmanured plots for comparison. If there had been three, one in the middle and one on each side, as recommended, we could have told much better whether the soil was uniform, and what it could do of itself. Still the inferences above, seem to me, on the whole, warranted. (8), In such experiments, generally, the gain or loss on a single plot is not an accurate measure of what it would be on a large scale.

(9), The plots were very small, four square rods, instead of ten, as suggested, but had the advantage of being long and narrow. At the same time so many concurrent results do show, I think, that, in its present condition, this soil needs phosphates more than anything else to enable it to bring good crops. (10), If Mr. Lufkin had not taken much pains to mix the fertilizers thoroughly with the soil, the heavy dressings on such small plots, 800 lbs. to the acre, would have been apt to injure the crops badly. As it is, I suspect that the trouble with the rutabagas on plots **1** and **3**, was that the dried blood and the potash salts were too strong for the plants.

Practical Applications—What Fertilizers to Use.

In Mr. Birdsey's experiment described in the February article, potash salts brought the best results. His general experience tells him that guano, phosphates, and bone, which furnish nitrogen and phosphoric acid, do not pay. I think he is clearly justified in putting potash on *that* soil, and will be, so long as it brings him good crops. Mr. Bartholemew, on the other hand, found phosphoric acid uniformly beneficial, and got very little benefit from anything else. He ought to confine himself more closely to phosphates. Mr. Farrington had the best results with phosphoric acid aided by some nitrogen. So long as his field is in its present condition, I think he need not apply potash. His soil may be like that of Mr. Lawes' farm in England, which has proved capable of keeping up a full supply of potash through more than thirty years' cropping, and has, during that time, given as good crops with nitrogen and phosphoric acid, in chemical fertilizers, as with annual and heavy dressings of stable-manure. Meanwhile I think both Mr. Farrington and Mr. Bartholemew ought to make comparative trials—with superphosphates, bone, fish, and guano of various grades—in order to learn which will be the most economical sources of the needed ingredients, and how profitable each will be. In cases like Mr. Sage's, where the complete fertilizer, only, was successful, if the results are confirmed by future experience, the complete fertilizer will be in place. All ought, however, to make the most of what their farms produce, and *piece out* with whatever else they find to be the best and cheapest.

What may happen in the Future, and with other crops.

If Mr. Farrington keeps on applying phosphoric acid with a little nitrogen, or Mr. Bartholemew phosphoric acid, or Mr. Birdsey potash alone, while the crops are taking these away, and other ingredients with them, the time will be pretty sure to come when these will be accumulated in excess, and the others relatively deficient in the soil. Nor would it be wise for Mr. Birdsey to depend on potash salts, or Mr. Bartholemew on phosphates alone, for all kinds of crops. If either one is to grow wheat next season, some nitrogenous manure, say nitrate of soda for Mr. Birdsey, or Peruvian guano for Mr. Farrington, would very likely be profitable. If Mr. Bartholemew or Mr. Farrington were going to seed down to grass, I should advise bone, which, with a good deal of phosphoric acid, would supply also a little nitrogen, rather than a "plain superphosphate" without nitrogen. And if they want to put in clover and keep it in, a dressing of ashes with the bone would help it a good deal, and for that matter would improve the grass also. So Mr. Birdsey would be apt to find that a little superphosphate would improve a turnip crop even where his corn had seemed to ignore it. And in either case phosphates, Peruvian guano, dry ground fish, and the like, might be very useful to force early vegetables for the market.

W. O. Atwater,
Wesleyan University, Middletown, Conn.

Contiguous Houses, Costing $1,000 each.

BY S. B. REED, ARCHITECT, CORONA, LONG ISLAND, N. Y.

These plans were originally prepared for six connected cottages, just completed, for Mr. Fred. Storms, (manufacturer), at Bayside, L. I. They were designed to give the largest amount of accommodation, convenience, and finish, possible, for one thousand dollars each, and are especially adapted to rapidly filling localities, or manufacturing districts. By this system of building in blocks, a very large saving is made in materials and labor, at first, and little expense is required to keep them in order afterwards. Where desired, the introduction of gas, or water-pipes, may be made, from one to the other direct, at small cost. Such connected houses are really more comfortable than separate ones, as they protect each other at their sides from the extreme changes of the outward temperature; and are therefore warmer in winter, and cooler in summer. The site chosen in this case is elevated, and has a westward frontage, securing the important advantages of good drainage, and the admission of direct sun-light to every room.

Fig. 1.—FRONT ELEVATION OF ROW OF SIX HOUSES.

....**Exterior,** (fig. 1).—Building in blocks is a favorite mode with many large owners of village property. The chief objection to a majority of such erections is their formal and stiff appearance, arising from a monotonous uniformity, a repetition of parts, and the overpowering predominance of horizontal lines—partaking too much of the city-street style. To overcome such objections in this design, simple but effective irregularities were introduced, so that really no two dwellings are alike. The sky-lines are broken and varied; the main roofs have pedimented projections—with Mansard sections intervening; all horizontal lines are either shortened or omitted, leaving vertical ones to prevail, and the window openings are varied in their form and distribution. While these several features are essential to the good appearance of such buildings, giving them the pleasing elements of variety and picturesqueness, they do not add very materially to the cost. Cottages designed for simple dwellings, whether built apart or connected, should, as far as possible, preserve their identity as cottages, and if destined for undulating and picturesque situations, should be outlined to accord with their surroundings....**Interior.**—The following description of rooms has reference to the house at the extreme left; its relation with the adjoining one is shown by the dotted sketch at the side. All have equal accommodations; this and two others are similarly arranged, the remaining three have their sides reversed....**Cellar,** (fig. 2.)—Hight of ceilings 6½ feet. It is thoroughly floored, has outside entrances front and rear, and being well out of ground, is light and airy, and is adapted to general use for the coarser work. Bins for coal are placed where they may be readily filled from the front window. One corner is partitioned off for a bath-room and water-closet. The window to the latter is shielded by a latticed inclosure beneath the rear lobby, adding to its privacy. The rear area not being protected by the rear stoop, has hatchway doors to be used in stormy weather. The Stairs lead from near the front door, to the main hall of the first story....**First Story,** (fig. 3).—Hight of ceilings 10 feet. A Hall, Parlor, and Living-room are embraced in the divisions. The hall is entered from a neat porch, contains the main stairs, and leads to the parlor, living-room, and the cellar stairs. The parlor is pleasantly arranged with double windows in front, has neat stucco cornices and centers, and a marble mantle. The chimney-breast is placed to allow sufficient space between it and the central partition, for a piano, or other large piece of furniture. The living-room is of good dimensions and shape, has two windows, a closet, a large fire-place, and a sink. The door leading to the rear lobby has glass upper panels, admitting additional light in the room in pleasant weather, when the lobby door will be likely to stand open, and through it the lobby will be lighted at night from within. The main stairs, leading to the second story, are of the "quarter-circle" pattern, and are neatly finished with hard-wood railing, with a niche above ...**Second Story,** (fig. 4).—Hight of ceiling 9 feet. This story is divided into a small Hall, two Chambers, two Bedrooms, and three Closets. Each of the rooms is well lighted, and chimney-breasts, with marble shelves, and stucco trusses are finished in each chamber....**Construction.**—The average depth of the excavations below the surface is three feet. The Foundation walls are of brick work, 8 inches thick, those for the exterior are 7 ft. 4 in. high, showing an average of 4 ft. above the final grades. (In this particular case, the site being elevated, only 4 inches of additional filling was required in the grades, the balance of the loose earth being used to fill more depressed grounds). All interior cross-walls of brick are omitted, their places being supplied with brick "footings" and framework. These brick footings are laid in trenches 4 inches below the cellar bottom, and are 8 inches high and wide. Sills of 4x6 timber are laid on the center of these footings (edgewise), leaving a margin of 2 inches on each side for the support of the ends of the cellar-floor beams. Girts are put above the sills (also of 4x6 timber), anchored to, and level with the outer foundation walls, and are supported by studding and braces, thus forming an inexpensive and substantial division and bearing between the cellars. The principal frame is of regular sized sawed timber, thoroughly framed and braced. The sidings are of clear pine clapboards, laid on hard-rolled sheathing-felt. The upper roofs are covered with IC charcoal tin, "tern-plate," and the Mansard sections are slated on hemlock boards. The interior flooring is of 7-inch milled spruce; outside flooring of 4½-inch milled pine. To prevent the transmission of sound, all the main divisions of framework between the houses are deafened by a filling of pale brick and mortar. The cellar ceilings and side walls are white finished on one coat of brown mortar. All other plastering is hard-finished on two coats of brown mortar. Circular ventilators are placed in each gable, and two ventilators made to resemble the chimney tops are placed on the higher or central ridge of the roof, to allow for the escape of heated air from beneath the roofing. All windows have 14-inch sash, of four lights each; those in the cellar are hung with butts; all above are balanced with iron weights, and have outside blinds. The doors are first quality, four-panelled. The interior casings are of clear pine, and are neatly moulded, and the parlor windows have panelled backs. The Painting is done as described in the *American Agriculturist* for June, 1877, except that the blinds are of a chocolate color.

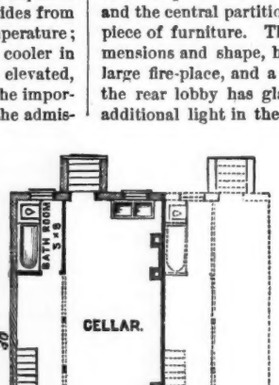


Fig. 2.—PLAN OF CELLAR.

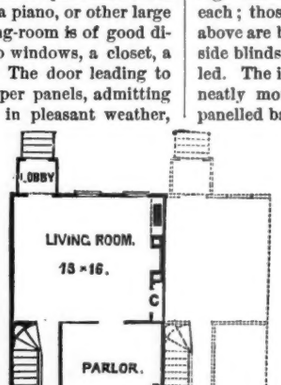


Fig. 3.—PLAN OF FIRST FLOOR.

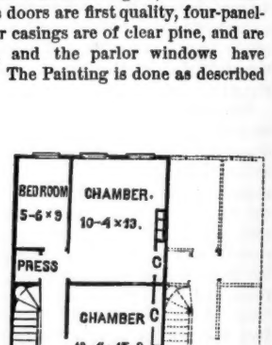


Fig. 4.—PLAN OF SECOND FLOOR.

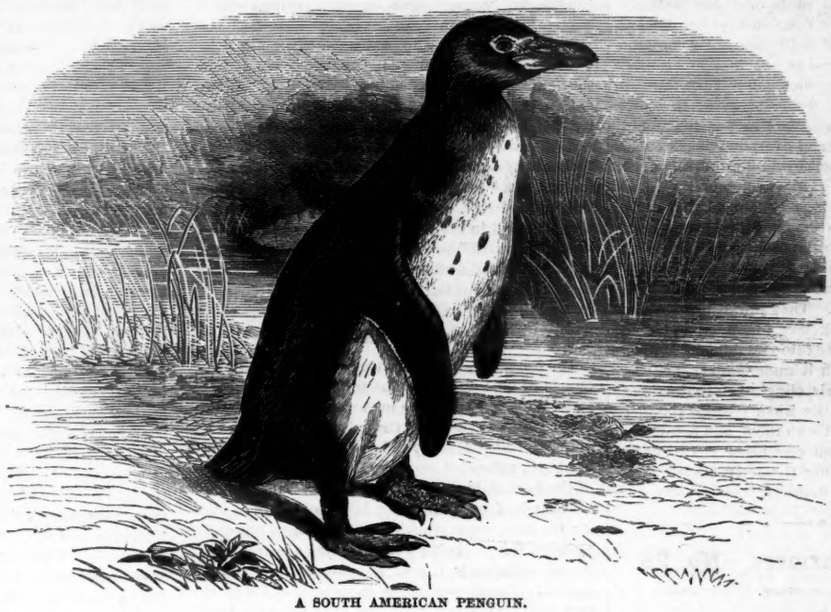
Estimated cost of materials and labor:

Mason's materials and labor	$1,300.00
Lumber of all kinds	1,150.00
Tinning and Slating, (complete)	300.00
Rolled Lining, $30; Porches and Lobbies, $275	305.00
Cornice materials, (prepared at mill)	120.00
Sash, Doors, and Blinds	400.00
Stairs, with outside Steps, with Railings	500.00
Shelving and Sundries	325.00
Nails, $65; Hardware, $300	365.00
Painting, $300; Cartage, $85	385.00
Carpenter's labor, (not included above)	800.00
Total cost of **Six** Dwellings	$6,000.00

Mr. Storms added about $1,000 to the total cost of six buildings in plumbing, sewers, gas-pipes, and in fencing separate front and rear yards, to each house. As these improvements are not generally required, they are omitted in the estimate.

White-Crested White Polish Fowls.

The Polish fowls are known by their very conspicuous crest. The origin of these crested fowls is somewhat obscure. Cuvier and Buffon mention them, but are unable to fix upon their original source. It is supposed that they were first described by an Italian author, about 260 years ago, in whose treatise rough wood-cuts of some crested fowls were given as "Paduan Fowls." Padua was an Italian city, and these crested fowls were, therefore, Italian. Buffon refers to the Paduan fowls, and supposed them to have been descended from Asiatic stock; he also described a variety with white body and black crest, which has long been extinct, although breeders have made many efforts to restore it. The varieties of the Polish fowls now known, are the White-crested White, the White-crested Black, the Golden, and the Silver-spangled, with some bearded varieties. Of these, the most beautiful is, perhaps, the first mentioned, the portraits of a pair of which are given on this page. This pair was bred by H. T. Sperry, Esq., of Hartford, Conn., who has devoted ten years of his leisure from journalistic duties to their careful culture. He has made a specialty of this breed, and has imported fowls, at a cost of $130 in gold the trio, for the improvement of his stock. The Polish fowls are profuse layers, non-sitters, delicate table fowls, of handsome appearance; they possess an oddity in their crests, which makes them attractive to the fancier and the amateur. They are contented in confinement, and bear close quarters very well; are easily kept within bounds, and becoming readily attached to their owners, make pleasing pets. When young, they are unusually elegant with their full crests, gracefully shaped little bodies, and tame disposition. On the whole, there is hardly any other breed which would give more satisfactory results in every way, where but one is kept, than this. It is somewhat strange, therefore, to find that Mr. Sperry is the only amateur who has devoted time, attention, and money, to the breeding and improvement of this variety of fowl as a single specialty. As a matter of course, it is easier to excel in one thing than in many, and Mr. Sperry's success at the exhibitions over other breeders, is the natural result of his singleness of purpose and perseverance. For some years back, he has taken the principal prizes at the poultry exhibitions wherever his birds have been shown. For ornament, the pure white breeds have a decided advantage over the colored ones, because they show so conspicuously upon a green lawn or a field. The White Leghorn is very popular on this account, as well as for its prolific egg-producing; but the White Polish has an advantage over the graceful Leghorn in the possession of a crest, a heavier body, and better flesh, as well as being equally valuable as an egg-producer. For ornament, therefore, as well as for use, the White Polish should be popular fowls. Perhaps they have formerly suffered in reputation somewhat from vicious breeding in the hands of persons less conscientious than Mr. Sperry. The breeders we refer to are fortunately not Americans, for it is to our breeders that these fowls owe their restoration to their old vigor and constitution. As in other particulars, so in this less important one, our poultry fanciers have been able to beat foreign breeders at unfavorable odds.

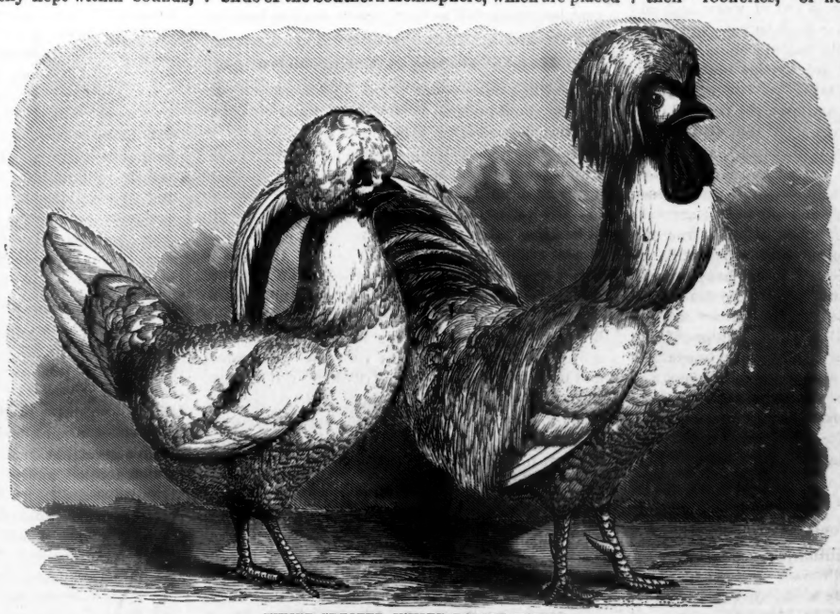


A SOUTH AMERICAN PENGUIN.

The Penguins.

Under the common name Penguin, are included birds of the Southern Hemisphere, which are placed by naturalists in three or four different genera. They are all found upon the sea shore, and are similar in their habits to the related Auks of the Northern Hemisphere. The general appearance of the Penguins is shown by the engraving upon this page. These birds are found upon the islands of the South Pacific in such numbers that the accounts of explorers in those regions as to the extent of the flocks, and the manner in which they cover the shore, seem almost incredible. It was formerly supposed that the immense guano deposits of the western coast of South America, and neighboring islands, resulted from the accummulated dung of these birds, though some recent naturalists do not accept this view of the origin of the guano deposits. The acquisition of a fine specimen by the Royal Zoölogical Gardens (London), allowed "The Field" to present the portrait which we have re-engraved. The plumage of this bird, when old, is of a dark-brown color, the breast being white, spotted with brown. But soon after moulting it undergoes a change. In the moult, the feathers do not fall off singly as is usual with other birds, but in flakes and large scales. The new plumage, when complete, is dark-bluish-black on the back and wings; a white line passes over the eye towards the crown of the head; the breast and belly, and under parts of the wing, are white; a broad black line borders the white all around from the throat to the tail. The Penguins are all most expert fishers and divers, and dart through the water with the greatest activity. Upon land they jump and wabble about in a most ungainly fashion, their movements being somewhat as if their feet were tied together, and present a ludicrous mixture of hopping, shuffling, and falling about. Of the habits of the Penguins, we have a graphic description by one of the company of the exploring ship "The Challenger," in his "Log Letters." The writer describes what is known as one of their "rookeries," or nesting places, as follows:

"Between the foot of the cliff and the beach was a bank covered with long tussock grass, among which the Penguins had their nests, and from which they had regular roads into the rookeries. Among the stems of the tall tussock grass they were sitting about in thousands on their nests, consisting of a layer of grass. It was not pleasant walking in the rookery; horrible smells, to say nothing of the fierce digs we got in our legs, and the fiendish noise—something between the last notes of a donkey's bray and a deep-voiced sheep—a perfect roar which is kept up night and day, and plainly audible from the ship, sounding on a still night like the roar of a heavy surf. They never had more than two eggs, sometimes only one, larger than a Dorking's, colored dirty-white with brown stains. The young, just out of the egg were black, naked things. Many of the eggs were cracked by the young inside, who were poking their bills out. Afterwards we walked back to the rocks where we had landed, a distance of five or more hundred yards, through the densest



WHITE-CRESTED WHITE POLISH FOWLS.

part of the rookery, and ever to be remembered by me as the most awful walk I ever had. The grass grew six feet high, matted and tangled, while thousands and thousands of Penguins swarmed between the tufted stems. Whenever we stopped to see where we put our feet, we were instantly attacked by a host of infuriated birds, and got horribly tweaked and digged at. You can have no conception how infuriated and bold they are when protecting their nests, rushing at our legs in crowds, and following us, pecking viciously. They were so thick that it was useless trying to avoid them, so one had just to tramp on as fast as possible, amid the deafening brayings, and overpowering stench. Suddenly we were stopped by finding ourselves on the brink of a low cliff. This stretch of rock was covered with Penguins, one stream coming from the grass and putting to sea, and the other stream landing and hopping into the rookery. Marvellous jumps they made in coming down the rocks, doing a jump of three feet and more quite easily, bolt upright the whole time. They jump into the sea from off a ledge of rock feet foremost, and land very cleverly; as the wave came washing up against the rock, they came with it under water, shooting out of the depths in shoals, clinging on to the rocks by their feet, and when the wave receded the face of the rock was plastered with them, and before the next wave came they had clambered up in some wonderful fashion, helping themselves with their bills, but not with their flappers."

Among the Farmers.—No. 28.

BY ONE OF THEM.

Tramp, Tramp, Tramp.

There is no echo attending the muffled footfall of the army, the straggling forerunners of which already appear along the highways and in our door-yards. Where the tramp hybernates is, perhaps, still an undiscovered fact in Natural History. There is chance enough in the city, and many a snug corner in boiler-rooms, under sidewalks, and in coal-holes. I am curious to know, not where or what have been the winter quarters of this army, but whether the people are any nearer the solution of the tramp problem than they were a twelvemonth ago. I have the profoundest pity, not to say sympathy, for the poor fellow who is out of work, and can get neither work to do nor food to eat; but not a particle for the 20,000 able-bodied wanderers of the male sex, who make our quiet roads both hideous and dangerous. A visitation or two of locusts, rouses half the country, and even the General Government, to put them down; but this visitation of "bummers" is ten times as disastrous, and a great deal nearer home. So far as I am aware, little effort has been made to have more stringent laws passed in regard to this nuisance, and our people are waiting in apathy to see if the times, or the silver bill, or resumption, or some other occurrence, will not prevent the same condition of things happening as last year. It is very pleasant "to entertain strangers," but tramps are a kind of strangers who are so often entertained unawares, and who so often manifest a most unpleasant familiarity with your house and surroundings, that they are, as a class, in no way entitled to be regarded as strangers, any more than minks and foxes are. Arrest as vagrants, detention at steady labor, with enforced cleanliness and tidiness, and with good plain food, for as long a time as the law allows, will do away with the tramp nuisance and danger in a very short time.

How Often to Feed Work Horses.

There is a conflict of authorities on this subject, but writers agree that all horses ought to be fed as often as once in about six hours, during the day—some say four hours. No doubt, a horse may eat his fill and digest it in about six hours, and be ready for another ration. They may be managed so as to be ravenous for food all the time, and yet eat more than enough—and one set of horses will be in good condition, will do about twice the work of another set on half the feed. I have been watching the working of an experiment—if so it may be called—which furnishes a case in point: A long established firm in New York employ constantly, and have heretofore owned, about five one-horse truck teams. That is, five horses have done their work, a considerable part of the time one having but little to do, but necessary in case of any emergency. Some months ago the entire stock of horses, trucks, stable furniture, harness, etc., was sold to an employé, who has, since then, added no new horse to the stable, done the same work, done the carting for another house—in fact, got nearly double the work out of the horses—and yet they have been constantly improving in looks and in ability to do work. At first the feed was not essentially changed. The horses had better care, and the eye of a master, who was their owner, though not their driver. The truckmen, somehow, felt more interest in their work and in their horses, and this made a difference; but all things combined must have produced their legitimate result within two or three months. At all events, matters were getting on very well, when the owner decided to

Cut Off the Noon Feed.

The horses had been getting about four to six quarts of oats during the hour of rest—between 12 and 1 o'clock—while the men were eating their dinner. I am not sure that they always got their full hour of rest, but they did generally. The result has been, a decided improvement in the condition of the horses, in their ability to work, and the gain of fully half an hour, when it is necessary to take it; for now, when work presses, the men are quite ready to forego their rest and, taking a hurried bite, be off with their trucks as soon as they can be loaded. The horses leave the stable at 7 o'clock, and return at about 6.30, the year round. Thus, they go twelve hours without feeding, and at more or less hard work, at a slow gait all the time, except when the trucks are being loaded and unloaded. When it is practicable, of course, loads are taken both ways, and this saving of time is also a saving of horse-flesh; for no doubt a heavy, well-fed horse is quite as much taxed in trotting home with an empty truck, as in drawing back a laden one. I should add that the horses are not deprived of the oats by not getting them at noon, for their morning and evening rations are increased, but not proportionately, there being a saving of about two quarts to each horse on an average. Nevertheless, they are now doing better, and looking fifty per cent better, as well as doing more work at less cost of feed than under the old method.

Horses' Habits in Lying Down.

One thing more about horses. I don't know why a horse should not be as much rested and benefited by lying down as any other four-footed beast. A horse often sleeps standing up, and so does an ox. I know that it was claimed for a gray horse once, as a special merit, that he would not lie down unless his stall was well littered; consequently all expense of bedding might be saved, as no doubt it had been. Horses are peculiar about lying down. It seems as if they knew their helplessness when in this position, and were bound never to expose themselves to danger. Athough many may be lying down, every horse in a stable is on his feet at the slightest noise. It is, besides, almost universally regarded, and usually truly, as a sign of ill health, if a horse is found lying in the day time. I have recently come to the conclusion, however, that if horses are perfectly easy in their minds, they will take as much comfort in lying down as cattle do, and I can point to one stable, not my own, where spirited well-fed horses may be seen lying down at almost any time of the day or night, and it comes from the perfect confidence they have in their groom.

Chances for Farming.

With an overstocked labor market, and wages very low; with thousands of acres of farming land, which have been lying fallow, or rather running wild, for fifteen years, more or less, in every direction within fifty miles of New York, returning to the hands of the original owners, or to mortgagees, and with the best fertilizer in the world, the dung of well-fed horses fairly "going a-begging" for some one to buy and use it, I see no reason why we can not again become a farming community. We have been in the habit of raising crops which would not bear long transportation—hence were adapted to the home market, which we could watch and take advantage of. Gradually steam communication with southern ports has made it almost as easy to send peas, potatoes, and parsnips, from Virginia or the Carolinas, as from Monmouth Co., N. J. Nevertheless, we have a great advantage in our ability to get city stable-manure. For this, Long Island is still the great market, yet transportation by boat to the Connecticut ports along the Sound, and up the Connecticut River as far at least as Hartford, for the use of the tobacco-growers, has been in vogue for some years. This year the tobacco men have no heart, and are turning their land to the raising of crops which can be consumed on the farm, or sold in the vicinity, and are buying no manure. The market gardeners of Long Island are so short of money, on account of the immense cabbage crop which went to waste last fall, that they are buying but little, and if railroads running through farming districts were as awake to their interests as is the Long Island Railroad, we should have a fertilizer at hand, which would make the waste land and old farms wave with wheat, and smile with potatoes. The Long Island road favors the farmers not so much in the matter of cheapness of transportation, which is not cheap, indeed, considering that the manure which they carry enables them to move sundry other articles of produce, and many passengers to and from the city, as in their willingness to accommodate those who live along their lines. They will throw off a car-load of manure at any point where it is most convenient to the buyer, if he will only set up a modest board with his name or "mark" upon it. Other roads ought to do the same thing, and besides should erect such cranes or derricks as can most conveniently move the manure from the boats to the cars.

The Supplying of Milk,

in the immediate vicinity of a large city, is certainly one of the most profitable branches of farming. Were farmers properly seconded by the city authorities, they would have no difficulty whatever in affording, at current prices, or say at six and eight cents a quart, as much pure milk as the citizens of New York will pay for. The close proprietorship of "milk routes" is one difficulty. The citizens have little idea that *they* themselves, and their children, are bought and sold like the very cattle whose milk they drink and get sick upon. A swill-milk stable, and its milk route, are sold together, and the route is just as much tangible property as the cows. Any farmer, or the agent of a company of farmers, who would undertake to sell, or even exhibit, pure milk along one of these established routes, would be mobbed; his cans would be emptied, or pierced, and the milk let out; or the milk would be drugged and so curdled, or in some way spoiled. These things have occurred so often that the effort has been given up. The children pine for milk, which may be had in abundance if the City Government would only see fair play. What we need is

Free Trade in Milk.

As it is, it hardly pays to raise milk and sell it at three cents a quart, where land is worth more than $100 an acre; and as that is all, or more, than we can often get for it of the milkmen, it follows that the milk business has been given up by our farmers to a great extent, and that now milk is brought from a great distance, or produced in the stables which abound in the immediate suburbs. A new impulse would be given to farming and stock-raising if farmers could dispose of their pure milk in the city. They would willingly submit to any sanitary restrictions, and their milk to any tests which would demonstrate either the presence of water, or any impurity; and the present seems a very favorable time to make an effort for free trade in milk. In connection with this abundance of manure, and the possibility of our being able to sell milk to compete with the watered and sickly stuff which drives people against their will to use condensed milk, instead of the natural product, I am led to think favorably of the effort now being made, with some success, to introduce the production of

Beet Sugar.

(Why people of sense call it beet *root* sugar, I can't see. What is a beet but a root?—that is all there is to it. We do not think of the tops when we speak the word, and to imitate the English is following a very poor example in matters of language; for I think they are as incorrect as they are opinionated.) It takes capital, and I verily believe it will prove a good investment for capital, especially in the vicinity of New York, where so much sugar machinery is lying idle, or earning so little. What modifications of the modern sugar houses it would require to enable them to work over the crude product of the beet sugar works, I do not know, but it seems as if the capital now invested, and nearly useless, might thus find profitable employment. On Long Island, along the Connecticut coast, in New Jersey, especially in Monmouth, Essex, and Bergen Counties, we have admirable land for beet raising, and we certainly have the manure. It will be easy to get the labor to do the work well, and yet not neglect the raising of all that market truck, which will be profitable one season with another. Whatever profit there might be from the beets, would be more or less regular—not subject to the same fluctuations and disappointments that attends the raising of cabbage and celery, and the like.

Farmers who consider this subject of beet sugar, must bear in mind that the *sugar* takes nothing from the soil—is no tax upon the land, the residuum, or pulp, after the expression of the juice, being returned to the farm for feeding stock. In this way a much larger stock of cattle is maintained, much manure produced, and the farm steadily benefited by the crop. Deep tillage, clean tillage, and high tillage, are enforced conditions, and wherever they are practised it is done profitably. The owners of a few reclaimed swamps in Louisiana, and of a few acres of "sugar bush" in Vermont, should not be the only ones benefited by the duties on sugar, when a large proportion of the farmers through the best parts of the Middle and Western States might enjoy the "protection," and share the advantages of the higher price of sugar.

Talks on Farm Crops.—No. 15.

By the Author of "Walks and Talks on the Farm," "Harris on the Pig," etc.

"I have known a fair crop of oats," said the Deacon, "sown as late as May 15, but, as a rule, in this section, if not sown before May 1, we stand a small chance of getting anything but straw."

"There are few crops," said I, "more dependent on the season than oats. If that is favorable, oats will stand much poor farming, and if unfavorable, it will tax all our skill to produce a large crop."

"We have comparatively few experiments," said the Doctor, "with artificial manures for oats, but those that we have, indicate that the manures best for wheat and barley are also best for oats."

"There can be little doubt on that point," said I, "but we might differ as to what manures are best for wheat and barley. All will admit that, where the soil has sufficient phosphoric acid and potash, available nitrogen is the one ingredient most needed."

"And yet," said the Doctor, "in the experiments quoted by Prof. Atwater, in the May No. of the *American Agriculturist* for 1877, page 171, nitrogenous manures did not increase the yield of grain, while they produced a greatly increased growth of straw. Thus the plot without manure produced 50 bushels of oats and 2,372 lbs. of straw. On the adjoining plot, with 357 lbs. of sulphate of ammonia, the yield was about 50 bushels of grain, and 4,049 lbs. of straw. With what is called a 'complete fertilizer,'—containing nitrogen, phosphoric acid, potash, and lime—the yield was 51 bushels of grain, and 4,387 lbs. of straw. Another plot, dressed with 178 lbs of nitrate of potash, 223 lbs. sulphate of ammonia, and 312 lbs. of plaster, produced 58 bushels of grain, and 4,174 lbs. of straw. This was the best yield in the field. The only practical conclusion to be drawn from the experiment is this:—So far as the production of grain was concerned, the land was rich enough for the *season*. An addition of more plant-food increased the growth of straw, but had little or no effect on the grain. The oats on the 'no manure' plot weighed 43.2 lbs. to the bushel, while with a 'complete fertilizer' they weighed only 39.6 lbs. per bushel. This is additional evidence that a better 'season,' and not richer land was needed to produce a larger crop of grain."

"Well," said the Deacon, "what of it?"

"Simply this," said I. "Farmers have not merely to look to making the land rich, but they must get the crop in early. And to do this, the land must be drained, and made clean and mellow. Artificial manures are thrown away when applied to wet land. And it should be well understood that a dressing of manure, rich in nitrogen, might give us a large increase of spring wheat, barley, or oats, if sown early in spring, but if sown late, it may give us more straw, but a poor yield of grain. Mr. Lawes ascertained this fact a quarter of a century ago."

"But suppose," said the Doctor, "you had a piece of rich land, or land heavily manured, that you wished to sow to oats, but could not get them in early, what would you do in such a case?"

"Plant the field to corn," said I, "or drill it in with corn for fodder, or plant potatoes."

"Exactly," said the Doctor, "but this is dodging the question. I assume that you must sow oats."

"Very well, then," said I, "sow them, and run your chances. If your land is rich enough, you might find the oats a capital crop to cut and cure *for hay*. Where timothy hay finds a ready market at good prices, farmers can feed their horses much cheaper on oat-straw than on hay."

"That is so," said the Doctor, "but if the horses are at hard work you will need to feed more grain or bran with the straw than with the hay. There is nothing I like better for my horses, especially for a change, than to take oats in the sheaf, and run them through a feed-cutter. A quart of corn-meal, three times a day, mixed with the chaffed oat-straw and oats, will keep a horse in good condition, and, as you know, I have to drive my horses over heavy roads, and in all kinds of weather. Six pounds of this chaffed oat-straw contains about 2 lbs. of oats."

"When oats are to be used for this purpose," said I, "the crop should not be suffered to get fully ripe. When cut green the straw is more succulent, and if properly cured, the horses will not only eat it with a greater relish, but the nutriment it contains is more easily digested. We have a splendid climate for curing the crop. If cut with a reaper, and thrown off into sheaves, and after lying exposed for a day or so to dry, it is bound and stuck up into shocks, the crop can be cured to perfection with little risk. The sheaves can then be stowed away in a small compass, and are much easier handled and cut into chaff than when the crop is put in the barn loose like hay. Still the method of curing must be determined by circumstances. If I had plenty of barn-room, or if I had to put the fodder in a stack, and if the crop was very green, and badly lodged, I should cut and cure it as I would hay; or as I cure oats and peas."

While the Doctor and I were talking, the Deacon had picked up the bound volume of the *American Agriculturist* for 1877, and was studying Prof. Atwater's article on page 171. "I tell you," said he, "if you were going to raise oats for hay, these artificial manures would give you a great crop. The superphosphate did no good, but about 50 lbs. of nitrogen alone, gave an increase of nearly 1,700 lbs. of oats and straw, and nitrogen and potash an increase of over a ton of oats and straw. The crop without manure was nearly 2 tons per acre, and the crop with the nitrogen 2 tons 16 cwt., and with the nitrogen and potash 3 tons per acre."

"Yes," said the Doctor, "and I would quite as soon have it as 3 tons of timothy hay."

"And the crop," said I, "only occupies the ground three or four months, and after harvest you can plow the land and sow it to wheat. On the whole, oat-hay is a crop worth trying on rich land."

"I suppose," said the Deacon, "that the oats would often be sown on black, rich, alluvial soils, not suitable for winter-wheat, and in this case it might be desirable to seed down with the oats."

"If the land was very fine and mellow," said I, "we should risk but little in sowing grass-seed, even as late as the middle of May. Much depends on the condition of the soil. I once had a capital catch of clover sown on winter-wheat late in May."

I have for fifteen years let my married men, who live in houses on the farm, plant a few rows of potatoes in the field, with my own crop. We plow the land, and do all the horse-work, but they furnish their own seed, and do the planting, hoeing, digging, etc. Once or twice my crop has been better than theirs; but, as a rule, they beat me. Why? is a question I have often asked myself, but can get no satisfactory answer. The land and preparation are the same, and the cultivation is the same—unless, possibly, the cultivator is held more steadily, and is not allowed to skim over the hard spots. Their crops are no cleaner than mine. In fact, sometimes not so clean, but it may be that the hoeing and hilling are done with more care. The more a farmer looks at his cows and sheep, and horses, the better they thrive. Possibly my men, in hoeing their potatoes, look at each plant with more interest than they do at mine, and give the hill a few affectionate taps with the hoe.

Then, again, we usually, though not always, mark out shallow furrows with a plow, plant the potatoes in the furrow, and cover with the plow—and if any are not covered with the plow, we go over the field afterwards and pull soil on to them with a hoe. My men cover *their* potatoes with a hoe, and probably do not cover so deep.

"And what is equally important," said the Deacon, "if not more, they take pains to get some nice, mellow surface soil to cover with, while the plow in some places turns up and throws on the potatoes soil that is cold and cloddy."

"I am inclined to think," said I, "that I have been in the habit of planting my potatoes too deep. But a great deal depends on the soil and season. Two years ago, the author of 'Among the Farmers,' in the November No. of the *American Agriculturist*, page 414, writing during a great and protracted drouth, which had almost destroyed the potato crop in his section, came to the conclusion that we had been neglecting early planting. The best crop in his neighborhood was one planted early and well tilled. The plants were well established before the beetles or the drouth seriously affected them. But he thought early planting alone was not enough. Deep planting was nearly as important. 'If the soil be reasonably deep and mellow,' he said, 'the seed may be placed six inches deep, though I would not advise or direct that it be planted more than five, for this would accomplish the setting of the seed probably at something over four inches. This depth is usually about right, yet in sandy land six inches is none too much.' I have acted upon the same idea. But I have made up my mind to plant shallower."

Another thing I have made up my mind not to plant or sow so deep—that is mangel-wurzel seed. Last year we had very dry weather at the time I dibbled in the seed, and wishing to put the seed down into the moist earth, I covered them two or three inches deep. Some that were planted shallower came up far better. An inch is deep enough, especially if the land is rolled after planting, as it always should be, and the fine soil pressed firmly around the seed. Even in severe drouths there is more moisture in the soil than appearances indicate. The point is, to make the soil fine and mellow before sowing, and then to roll down firm and smooth. In such a case the moisture from below will rise near enough the surface to cause the seeds to germinate—and if the seeds sprout, there is little danger of their being injured by drouth.

WINTER OATS.—Although winter oats would be a very valuable crop in the Northern States, and it seems reasonable to expect that they will grow under favorable circumstances, our experiment with them the past winter has not been such as to induce any further trial. As they were widely advertised in northern agricultural journals last season, we decided to give them a trial, which was done at considerable expense for seed and freight.

The winter has been a very favorable one for them—indeed, it could scarcely have been better. The lowest temperature has been 4 degrees above zero, and there have been many warm growing days. Yet nine-tenths of the plants are now lifeless, and the rest, though they survive, are in a poor, weak condition. At present, we do not think that southern winter oats are a promising crop north of Virginia.

Preparing Corn-Stalks for Fuel.

Where corn is burned as fuel, some saving may be made by using the stalks in place of the grain.

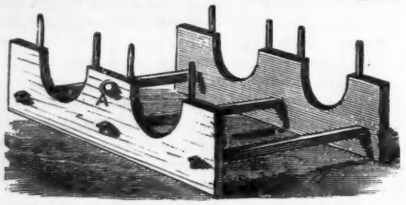


Fig. 1.—FRAME FOR BUNCHING STALKS.

The excellence of the ears as fuel consists in their solidity, and consequent slow combustion; while the great objection to the stalks is their lightness, and the rapidity with which they are consumed. If the stalks be pressed into small compact bundles,

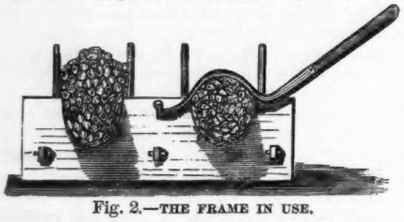


Fig. 2.—THE FRAME IN USE.

and bound with wire, they will burn much more conveniently. This may be done very easily. Make a frame of two pieces of plank, about six feet long, fastened together as shown at figure 1, and hollowed out to receive the stalks. The bundle is kept in place by pins inserted in the holes shown in the planks. The planks may be about 18 inches apart, making the bundle about the same length. When the stalks, stripped of the leaves or not, are laid in the hollows, they are pressed tightly by means of a curved iron hook fixed in a handle, as shown at figure 3. The hook is inserted in a staple, shown at *A*, in figure 1, and the handle being pressed down brings the stalks tightly together, when they are bound with pieces of wire previously cut into proper lengths. The bundle is then moved on in the frame and bound again, and so on until the whole is made into a series of bundles, which are cut apart with an ax. At each place where the cut is made there should be two

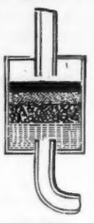
Fig. 3. HANDLE.

Fig. 4.—BUNDLE OF STALKS.

bands a few inches from each other, and the bundle is cut between these, (see fig. 4). The labor of preparing the stalks for fuel is less than that needed to cut and prepare fire-wood, and may be done under a shed during stormy weather. The bands, made of No. 12 or 13 annealed wire, may be raked from the ashes and used over again several times.

A Filter for Rain-Water.

A convenient filter for rain-water may be attached to the conductor from a roof at a point just above the surface of the ground, so that it can be reached easily, and where the pipe begins to curve towards the cistern. A box about two feet square may be made of cement, or of brick-work cemented upon the inside. A shelf, or horizontal partition, of slate is built in the box, six inches above the bottom, and this is perforated with a number of small holes, to permit the water to pass through it freely. The slate may be easily perforated by means of a punch or sharp-pointed spike; if this is struck a quick blow with a hammer, a hole is readily broken through the slate. First place upon the slate, an inch or two of coarse, well washed gravel; upon this put a layer of clean, washed sand, and then, if thought necessary, some finely broken charcoal. Upon the top of these materials, some perforated slates are to be laid, to prevent washing by the falling water. The manner of making the filter is shown in the engraving.



FILTER.

Scare-Crows for Cornfields.

A ready method of protecting newly-planted cornfields from crows, or blackbirds, is shown in figure 1. It is made of a light hickory, or other elastic stick, one end of which is stuck into the ground; to the other end is suspended a glass bottle, from which the bottom has been broken off. The cord by which the bottle is suspended passes through the neck; a nail is fastened to this cord to serve as a clapper, and so attached that it will strike the glass when the cord swings. A piece of bright tin, sheet-iron, painted shingle, or slate, is suspended to the end of the cord. When the wind blows, the suspended tin, or other article, is whirled in all directions, and causes the nail to rattle against the glass bottle.

Fig. 1.—SCARE-CROW OF BOTTLES.

The flashing of the bright object, and the bottle, as well as the continued rattle, will keep the birds at a respectable distance, for a time at least. As a variation, which may be used in place of the thin disc, an effective scare-crow may be made thus:—Take a large cork, such as is used in pickle-jars, procure some wing feathers of a goose, chicken, or hawk, and stick these firmly into the cork at three sides, so as to roughly imitate a dilapidated bird. Carve a rough head from a crooked branch, and arrange the tail feathers in an expanded position to catch the wind, by which it is caused to dart hither and thither in a most unexpected manner. This arrangement is shown in figure 2.

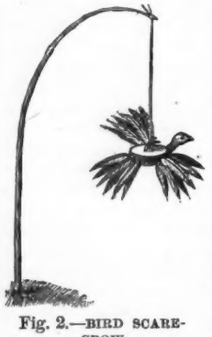


Fig. 2.—BIRD SCARE-CROW.

Green Crops for Cows.

The use of green crops for soiling cows is becoming absolutely necessary. Every dairy and milk farmer with whom we converse, admits that without growing green crops for fodder, his profits grow smaller every year, or his cows fail entirely to pay their expenses. One cow upon pasture and hay alone, requires about seven acres of ordinary ground. 12 to 15 cows are about all that can be maintained upon a hundred acre farm with pasture, hay, corn, and oats. The cost of average farm land in dairy districts is say $100 per acre. The interest on the cost of seven acres, at 5 per cent, is $35 per year, and the average profits of such farm land should be at least 5 per cent. Few farmers can see any such profit as this from their cows, after charging expenses and labor, although some may realize as much. But if, by the better management of their business, farmers can keep one cow upon two acres of land, and can make a profit of $25 to $35 per cow per year, then the land will return a yield of $12 to $17 per acre, or 5 per cent upon a valuation of $240 to $340 per acre. Land, like other property, is valued in proportion to what it produces. In England, farm land is worth, on an average, $500 per acre, and as it is held to be the most secure of all investments, a low interest return is satisfactory. But at this valuation, the rent of land produces from 3 to 5 per cent per annum. It is valued thus highly because it is made to produce large crops. If our land should be made as productive as that, it would easily bear as high a value. Thus the profits from our land, as well as its value, depend altogether upon the amount of the produce grown. The value of green fodder crops consists not only in the heavy products raised, but in the possibility of growing two or three successive crops in one year. The land is always busy, and is constantly producing something that can be turned into money, or its equivalent.

Cementing a Cellar.

Damp cellars are by far too frequent for comfort or health, yet they are easily kept dry. The most effective method is to cut a drain 10 to 20 feet distant on the side from which the water comes, and two feet deeper than the cellar bottom. This will cut off the flow of water from the sub-soil, and lead it away. But some cellars are so situated that no convenient outlet for a drain can be found, and some other method must be provided. In this case cover the floor of the cellar, and the sides, if necessary, with cement. The materials used are Rosendale cement, gravel, and sand. The tools required are a mixing-board and shovel, a rammer (fig. 2), and a smoothing-plank (fig. 3). The cellar-floor is first to be leveled, all hollows being filled up. Two barrels of coarse, sharp sand are thrown upon

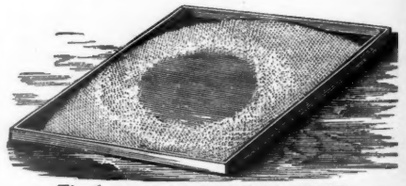


Fig. 1.—BOARD FOR MIXING CEMENT.

the mixing-board and mixed thoroughly with half a barrel of the cement, the whole being spread in a heap, hollowed in the center, as shown at figure 1. Water is thrown into the cavity in the center, and the mixed sand and cement is shoveled towards the water and mixed with it, more water being added until a semi-liquid mass is produced. To this is added, gradually, twice the bulk of coarse gravel, small stone, or broken fragments, previously wetted with water, and the whole is thoroughly mingled together. Every particle of stone should be brought into contact with the cement. The mixed concrete is then shoveled on to the floor, beginning at one corner, in a layer three inches thick; and as soon as the

Fig. 2.—RAMMER.

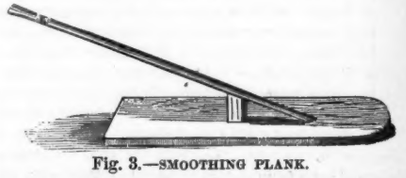


Fig. 3.—SMOOTHING PLANK.

material has been spread and leveled with the shovel, it should be well pounded with the rammer

until the surface becomes covered with semi-fluid cement. While one batch is being spread, another should be mixing. If the walls need cementing to keep out water that may penetrate through them, this should be done with the mixed cement and sand, without the gravel or stone. As soon as the concrete is hard enough to walk upon, which will be in 24 hours, the finishing coat may be laid on. This consists of the cement and sand, mixed as already described. This is spread with the back of the shovel one inch thick, and is finished with a smoothing-board having a smoothly dressed and well oiled surface, made in the shape shown at figure 3. The piece of board should be about 3 feet long and a foot wide, and the handle so inclined as to be convenient to work with. When finished, the floor will appear in section as at fig. 4.

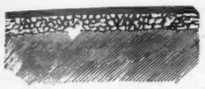


Fig. 4.—SECTION.

Improving Wet Meadows.

One of the most difficult of farm improvements is the reclaiming of swampy ground and overflowed meadows. At least it seems difficult, and it is really the least satisfactory job a farmer can undertake, because its success depends upon more than usually skillful management rather than mere labor. To get rid of the water, drains are needed, and these must necessarily be made in such a way as to lead the water, either to the lowest portion of the land, or from it altogether, into the nearest water-course. These wet lands are generally so nearly level, that it is often impossible for any but a practised surveyor, with his instruments, to decide which way the water will run in the drains, and it sometimes needs the surveyor's positive assertion to convince owners of such lands either that the water can be carried off at all, or as to the direction in which the slope actually exists. After much experience with swamps and wet lands, it may be stated that, as a general rule, there are very few indeed that do not admit of some form of drainage by which they may be brought under profitable cultivation as meadows. The possibility of this may be decided at little cost by the employment of a competent engineer who has made a special business of drainage and irrigation, and who thoroughly understands the work, or by the use of some simple and easy mode of leveling by the owner himself. Several methods of finding the level are described in "Stewart's Irrigation for the Farm, etc.," from which we reproduce the foregoing illustrations of leveling instruments. At figure 1 is shown a field-level, made by S. & W. E. Gurney, which is a very accurate instrument. With this are needed a "Jacob staff" to set the level upon, and a sighting-rod, marked with spaces of feet and tenths of a foot (or inches) above and below a standard mark, which represents the hight of the instrument above the ground when properly set and adjusted. At figure 2 is a pocket-level, which can be used where it is impossible to plant a staff, and if used with skill, this is about as effective as a more expensive instrument. With this *a sighting-rod marked* is used at the exact hight of the eye of the operator from the ground, and with feet and inches above and below this, and from it either way, as shown at figure 3. This instrument contains a spirit-level, the bubble of which is reflected from a sloping mirror within it, and is made to appear as if on the object-glass at the end, where it is crossed by a fine wire. When the wire cuts the bubble in the centre, the sight is on a perfect level, and the point on the rod can be marked by the person who holds it. When a piece of wet land is to be surveyed for draining, it is necessary for the surveyor to stand with his level at the supposed outlet or lowest point of the ground, and to take a sight across the space to the other side, or in different directions. He will thus find with ease the amount of inclination of the ground, which will generally be greater than has been suspected. For instance, in one case where the owner of a piece of wet ground insisted that a certain point was the lowest part of it, this was found on examination to be 5 feet higher than the opposite point, and the drains, when made, flowed with a good current in the opposite direction from that expected by the owner. When the lowest point has been found, the outlet for the water should be made there, and if there is no way of escape for it beyond that, a pond may be made there to collect it. The drains should be dug from this point upwards, and by observing the flow of water any ordinary laborer will be able to carry them along on a proper grade. This should be such as will permit a free flow of the water. At figure 4 is given a diagram of the manner in which the drains may be laid out from the outlet—in this case a brook—to the highest point of the swamp. The courses shown are the drains from the sources of the water to the brook, and may be made in the most direct line. The drains in all these cases should be open ones, as there would be an almost certain stoppage of tiles in soft mucky ground where there is no more fall than 5 or 6 inches in 100 feet. The form of the drain is shown in figure 5. To facilitate the use of the ground for a meadow, the ditches should be wide and shallow; 6 feet wide, and 1 foot deep at the center, and gradually sloping to it, is the form found most convenient.

Fig. 1.—GURNEY'S FIELD LEVEL.

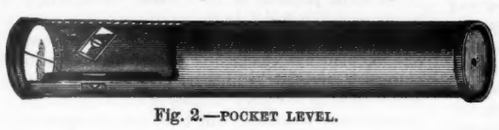
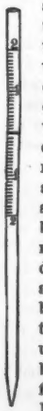


Fig. 2.—POCKET LEVEL.



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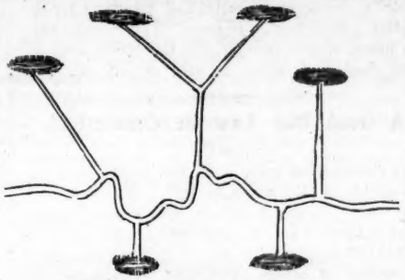


Fig. 4.—DIRECTION OF DRAINS.

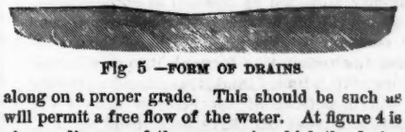


Fig 5 —FORM OF DRAINS.

Fig. 6.—TUSSOCKS IN MEADOWS.

As soon as made, these ditches should be sown with seed, and grassed over. When the surface of the ground is overgrown with tussocks of coarse grass, it will be the cheapest and easiest plan to cut these off by hand with a broad, heavy, sharp hoe, before plowing the ground. Generally they are in the shape shown at figure 6, and are easily cut off with a heavy hoe. These may be burned, when dry, and the ashes scattered over the ground. If the ground should become dry enough to plow, that would be the best method of leveling the surface. The furrows should be begun between the lines of ditches, so as to throw up back furrows, or ridges, in the highest parts of the ground, and leave the open furrows where the ditches will be made. In most cases, by good management, and a clear idea of what is to be done all through the job, nearly all the leveling may be done by the plow, harrow, and scraper, and only needs to be finished off by hand.

A Simple Foot-Bridge.

On a recent visit to a farm through which a small brook ran, there was much trouble in getting across the stream. To prevent such a difficulty is a very simple matter, but any provision for this, is one of the rarest things to find, even upon well appointed farms. A permanent bridge is not desirable in such cases, because of the cost of a structure that would resist the frequent freshets, and the ease with which a light bridge is carried away. The better plan is to provide a plank, 2 inches thick, a foot or more wide, and of whatever length may be required, and attach it by one end by a chain or rope, as shown in the illustration, to a stake driven firmly into the bank. The other end is left loose. When a freshet occurs the plank is only displaced by the water, but not carried away, and can be readily restored to position when the water subsides.

A SIMPLE FOOT-BRIDGE.

How to Raise Ducks.

Most farmers have a prejudice against water fowl, especially ducks. They tolerate geese better than ducks, because they will forage for themselves, and live wholly on grass through the summer, after the goslings are started. Ducks will not bear neglect so well; they are more prone to wander and get lost or devoured in swamps or brooks. They have a foolish way of dropping their eggs in water, and of following a brook, or river, into neighboring farms; unless they have suitable quarters, and receive regular attention, it is a good deal of trouble to look after them. The half-starved duck disposes of a good deal of corn at a single feed, remembering the past, and anticipating the future. The slipshod farmer is prejudiced against the bird, and will have none of him. But the duck has so many good qualities, matures so early, and furnishes so rare a repast, that the owner of a country home, with cultivated tastes, can hardly afford to do without a duck-yard. The flesh, in our esteem, is the greatest delicacy raised upon the farm, and if they were much more troublesome than we have ever found them, we should not hesitate to keep them. The fact is, a large part of the trouble is owing to sheer neglect, and the reputation of the bird as a gross feeder is owing to irregular supplies

of food. If grain, or other food, is kept within reach, they devour no more than other fowls that mature as rapidly. If in suitable quarters, and well fed, they get most of their growth in four months, and can be marketed in August at the watering places when prices are highest. The impression that a pond, or brook, is necessary to raise the ducklings, is erroneous. They need no more water than chickens until they are three months old, and are better off without any pond to swim in. We have raised fifty in a season in a quarter-acre yard, and found them no more troublesome than chickens. The best mothers are hens, and we prefer the Asiatic fowls, either Cochins or Brahmas. A hen of these breeds will cover nine or ten eggs. We have found an old barrel, with a board at the end, to fasten the bird upon her nest, as good as a more expensive coop. They are let off regularly at noon every day, when they have a half hour's range, green food, grain, and water. The young ducks are fed with some fresh animal food, and coarse Indian meal scalded, and this, varied with chopped cabbage, turnips, worms, and liver, is the staple food until they are three months old. They do much better on soft food than on grain.—The paradise of ducks is a location on a tide water stream or cove, where there is a constant succession of sea-food with every tide. If furnished with a little house, or pen, upon the shore, and a variety of grain, they will come home regularly every night, and lead an orderly life. The eggs are usually laid at night, or early in the morning, and very few of them need be lost. Of the four varieties, Rouen, Aylesbury, Cayuga, and Pekin, we give the preferance to the last for size, early maturity, abundance of eggs, hardiness, and domestic habits.

A Plan for Filling a Wash-out.

A correspondent in Georgia asks how to fill wash-outs, which are so frequent upon hillsides in the Southern States as well as elsewhere. Having had occasion to fill some of these unsightly gulleys, we adopted the following plan. Fig. 1 represents a very usual form of these hollows, which are to be first partly filled with stone or brush gathered from the most convenient point. If brush is used, it should be well packed and trodden down; if stone is used, the large ones should be thrown into the bottom, and the top covered with small ones. When the hollow is filled sufficiently with these materials, the ground is plowed from each side towards the center, gradually moving the earth until a gentle slope is made, as at figure 2; the dotted line shows the original surface of the ground.

Fig. 1.—SECTION OF GULLY.

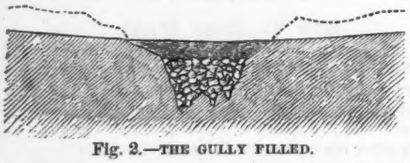


Fig. 2.—THE GULLY FILLED.

MORTALITY AMONG TURKEYS.—A correspondent from Fort Collins, Col., complains of great mortality among his turkeys. "They commenced dying off without anything, apparently, ailing them. They would go to roost at night, apparently in the best of health, and in the morning three or four, and sometimes eight or ten, would be lying under the roosts dead. Others would droop an hour or two, and then fall over. They had access to good water, and wheat and rye stubble, and were gaining very fast, and in superb condition. Of my flock of seventy-five, only five are now living. What was the matter?"—It is difficult, on these data, to state the exact cause, or to give a remedy. It is probable, however, that the cause of death was gorging with grain, found in the stubble, in addition to the insects which we suppose to be abundant in that region. Without the stubble they might have escaped any harm. Our best turkey raisers feed about 4 o'clock in the P. M., to encourage the flocks to come home early, and give time for digestion before they go to roost. This regular supply prevents over-feeding, and the turkey crop is, with Eastern farmers, as sure as any other.

A Good Dog Law in Connecticut.

In Connecticut there were four deaths from hydrophobia in 1876, seven in 1877, and two already this year. Among the above were several prominent citizens. There has been paid annually, $12,000 to $15,000, or more, for sheep killed by dogs, while thousands of others have been maimed but not paid for. Though many parts of the State are specially adapted to raising sheep profitably, the fear of loss from dogs has nearly put an end to this industry. The above condition of things led the State Legislature, recently adjourned, to pass, with great unanimity, a stringent dog law, of which the principal provisions are the following:

Every dog kept must be registered on or before May 1st, of each year, and $2,15 paid therefor, to the Town Clerk for each male dog, and $6.15 for each female dog. Every dog must *constantly* wear around the neck a collar distinctly marked with the register number and the owner's name.—Every dog not so licensed and collared, is to be killed, and $1 bounty is paid for the killing.—Any person keeping an unregistered dog may be fined $7, or imprisoned 30 days, or both; and it is made the duty of Grand Jurors and all other prosecuting officers, to prosecute any violation of this act.—All damages done by dogs to sheep or lambs, or cattle, are to be paid for by the town, and collected in full from the owners of the dogs. Any person killing a registered dog, unless such killing be justifiable for the protection of life or property, is liable for the value of the dog, as established by competent evidence, and to a fine not exceeding $7, or imprisonment not exceeding 30 days, or both.

The European Sparrow—Is It a Friend or an Enemy of the Horticulturist and Farmer?

BY DR. H. A. HAGEN, PROFESSOR AT HARVARD UNIVERSITY.

[But a few years ago, European Sparrows were hailed as the greatest boon to fruit growers, and were eagerly purchased from importers at $4 the pair. Within the past two or three years the bird has been as positively decried, as it was before extravagantly praised. The Sparrow controversy has been especially active in Boston and vicinity, and the literature, pro and con, is already voluminous. A decision adverse to the Sparrow, given by the "Nuttall Club," an association of young ornithologists at Cambridge, Mass., has induced Doct. Hagen to enter his protest. Doct. H. is one of our highest authorities in Natural History, and is connected with the "Museum of Comparative Anatomy" (founded by Agassiz) as entomologist. He addressed his defence of the Sparrow to our first ornithologist, Prof. S. F. Baird, of the Smithsonian Institution, who forwards it to us with this remark: "It is time, I think, that something should be said in defence of the Sparrow against the numerous attacks that have been made upon it. Without pretending to form a judgment in the matter, I am anxious to see both sides represented. The leading Natural History weeklies have done little else than abuse the Sparrow, and I would like to see Doct. Hagen's protest placed on record."—We here give the article referred to.—ED.]

The decisions of the "Nuttall Club," of which a report is given in No. 18 of the "New York Country," are based upon observations contradicting in several points the older ones, which are accepted by science, in the most decided manner. It appears by the report, that the Club either had no knowledge of these earlier observations, covering a space of more than a century, and sustained by ornithologists of well known reputation, or that it did not deem it worth while to compare its own observations with the earlier ones, which ought to have been done to fulfill the well known demands of science. The Sparrow literature is large, and opinions during the past century have considerably changed, until the final decision is most decidedly favorable to its value.

I will select only three authors, who are ornithologists, each one an authority for the economic natural history of his time, covering a space of a hundred years, and showing the gradual progress of the opinion as to the value of the Sparrow.

Mr. T. F. Bock, in 1784, considered the Sparrow simply as a nuisance, so injurious and obnoxious, he demanded that the Legislature should be applied to for its destruction; this was carried out several times with such a pernicious effect, that the Sparrow had to be introduced again. It is not necessary to give Mr. Bock's decisions, as they are exactly identical—the carnivorous and murderous habits excepted—with those of the Nuttall Club in 1878.

Mr. F. M. Bechstein, in 1795, says: "The food of the Sparrow, insects and grains, indicates him to be beneficial as well as injurious. In spring, he visits all fruit trees, collects caterpillars from the leaves and flowers, and kills an exceedingly large number of May-beetles to feed his young. In summer, he lives on the seeds of lettuce and of spinach, on young peas, cherries, grapes, and berries. In the fall, he goes into the grainfield and eats a large quantity of ripening or ripe grain. The greatest benefit he confers is in the destruction of innumerable noxious insects, May-beetles, pea-grubs, caterpillars, and grasshoppers, to feed his young." The Sparrow is from this not so injurious as he was declared to be in former times, and upon the whole is certainly more beneficial than harmful. I know towns where Sparrows were killed as injurious, but the fruit trees there never had fruit, though other towns in the neighborhood had plenty of it. The cause was, that the caterpillars were not killed by the Sparrows. Through loss came wisdom; the Sparrows were again introduced, and it was found more profitable to protect the fruit trees and vines against their depredation by simple artificial means.

Dr. C. W. L. Gloger, in 1858, says: "The formerly much-abused Sparrow is often an impudent fellow, but he eats insects as long as they are to be found. With some predilection, he collects leaf-lice from the buds of shrubs, and trees, and feeds his young with caterpillars. Certainly the Sparrow merits well the few cherries and grapes which he steals, as he protects so many other fruits, which he leaves untouched. In former times people were shortsighted enough to hunt and to kill the Sparrow; now opinion has changed. All intelligent horticulturists especially, will never persecute the Sparrow." Among the large number of books on horticulture, there is not one, which even excuses, much less commends, its destruction. If the Sparrows were injurious, they would be much more so for horticulturists than for farmers. The stomach of the Sparrow, in fall or winter, is rounded with seeds of weeds, which is certainly more than an equivalent for the grain stolen in summer.

These opinions are based upon observations made through a century, and supported by authors of acknowledged reputation, while the decisions of the "Nuttall Club" are given after only the observations of a few years. I would only object to a few observations given in the report, the rest being sufficiently answered by the above extracts.

The report states "the Sparrows to be carnivorous birds, eagerly destroying and devouring eggs, and newly-hatched young of other birds." It is well known to every naturalist, what science understands by the term "carnivorous birds," and it is well known that Sparrows do not belong to them. This term, as applied to the Sparrow, is decidedly out of place in the report of an Ornithological Club. The other part of the quotation reminds me of a quibble a century old. It was said that "the Sparrow invades the nests of pigeons, to cut open the crop of the young ones, and to feed upon the grain contained in them—*when he needs it.*" Of course it was understood that he never needed it.

The report says further, "The decided preference

for fruits and leaf-buds (the last observation is an original one of the "Nuttall Club"), renders them decidedly a pest to horticulturists." As this statement, if true, would be alarming for horticulturists, I should be very glad if the above quoted contradictory observations of Bechstein and Gloger would find a place in some prominent paper or magazine devoted to the interests of horticulturists. But I can give them some farther consolation. It is, perhaps, not commonly known to what an extent the horticulturists here find it profitable to depend upon German horticulturists. In 1867, wishing to send home a set of flower seeds, I went to the most prominent dealers, stated my purpose, and got the answer: "We import all our seeds from Germany." In 1874, I was asked by a friend to send the seeds of the American native Pine-trees. After going around in Boston, without success, I wrote to New York, Philadelphia, and St. Louis, and had from all the same answer. Now, when American dealers find it profitable to import seeds from Germany, and German dealers find it profitable to export them, it is rather obvious that the Sparrows, so exceedingly common in Germany nursery gardens, can not be a pest there, and consequently will not be a pest here. A book commending the persecution of Sparrows would at this day be considered by intelligent German horticulturists as a curiosity. The argument suggested in the report of the "Club," that the help of the Sparrows is not needed for the suppression of the Canker-worm, because various effective devices exist for the protection of fruit and shade-trees, decidedly loses its value, when summer after summer we have seen those devices applied with care, and in spite of these the foliage was destroyed—except where Sparrows were present in sufficient number to check it. Prominence has always been given to the alleged fact, that the Sparrows drive off indigenous birds. According to my personal observation in Cambridge, and other suburbs of Boston, this is not true. When I arrived here in 1867 I was surprised by the scarcity of birds in such a large number of beautiful gardens and splendid grounds. The following spring, I was able to understand why birds were so rare here, as I saw and heard, morning and afternoon, around and very near to the Museum, and elsewhere, the shooting of every kind of bird. I saw boys plundering the nests of the most valuable insect-eaters, Robins not excepted, and I also saw target-shooting in the open field; the target fastened to large trees, upon which were birds-nests. During recent years the protection of Sparrows has surely saved the native birds, and I have never seen in Cambridge more native birds, and never heard more beautiful song birds than in the summer of 1877. Concerning the diminished number of native birds in the Smithsonian grounds in Washington, recorded in the report of the Club, I am assured that one of the foremost American Ornithologists denies it to be the fact. After all, it should not be forgotten that by the rapid increase of the cities (Cambridge has more than twice as many inhabitants now as it had in 1867), and with the incessant disappearance of trees and shrubs, some kinds of birds may prefer to go to more secluded places.

The argument that Sparrows drive other birds out of the bird-boxes, is a rather funny one, when it will be remembered that all those bird-boxes were placed only for the Sparrow. I think every bird will fight for its home, nevertheless I observed, in 1877, Sparrows driven out of the box which they had used the year before by Swallows, which raised their young safely among a dozen of boxes near by used by Sparrows. In a box in the garden at the corner of Broadway and Harvard St., a pair of Sparrows and one of Swallows settled last year together. The box had *only one entrance*, through which both had to pass, and as there were two glass windows in the box, both nests could be observed, and the young of both were safely raised. If, as it seems to be the case, that native birds prefer now to breed in bird-boxes, which they did not and could not do here in former years, it would be simply reasonable to place more boxes everywhere, and as is done in Europe, different sizes for different kinds of birds.

Nobody has ever contended that the Sparrow is a beauty or a charming singer. Indeed, he is only an indefatigable business man, minding first his own affairs, as is not uncommon among business men. But he is admirably adapted for his business—which is to destroy insects; he is very enduring, staying through the winter, when few other insect-eating birds are here; he begins to breed much earlier, and breeds much oftener, than other birds, and is, therefore, more able to give an effective help in the destruction of insects and weeds. But it is true that he should be supported, as Mr. Allen remarks judiciously in the report, through enforcing, by statutary enactments, the protection of the fruit and shade trees by all available means.

As no naturalist would pretend, that a bird, by importation into a foreign, but similar, climate, could entirely change its character in a few years, the Sparrow question will probably here go through the same, though briefer, stages of opinion as in Europe. I consider the Sparrow to be a valuable addition to the native birds, and most certainly beneficial for both horticulturists and farmers.

A Wisconsin Barn.

"E. T. C.," Dane Co., Wis., sends a plan of a style of barn which is common in his neighborhood, and is found satisfactory to the farmers there. It is 60 feet long, 32 feet wide, with 18 feet posts. It has four bents, with a granary at one end, and a

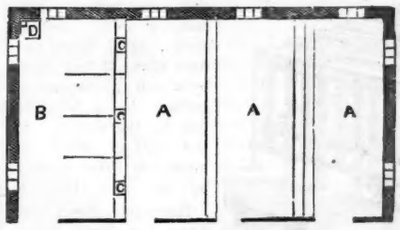


Fig. 1.—PLAN OF BASEMENT.

stone basement, 8 feet high, under the whole building, with sliding windows in the basement. Figure 1 shows the plan of the basement. There are three cattle stalls, *A*, *A*, *A*, each 14x32 feet, and having 10 stanchions; at *B* is the horse stable, 18x32 feet,

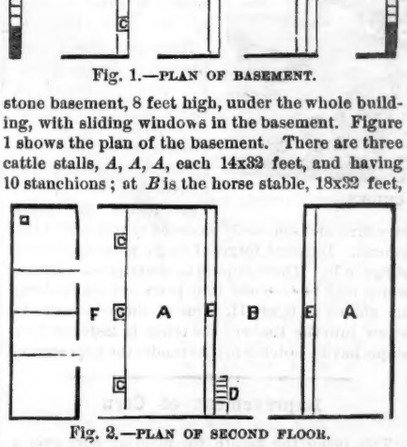


Fig. 2.—PLAN OF SECOND FLOOR.

for 6 horses; at *C*, *C*, *C*, are 3 hay shoots, 2 feet square, passing from the manger to the floor over the granary; at *D* is a box, 3 feet square, with spout from the oat-bin in the granary above. Figure 2 shows the plan of the second floor; at *A*, *A*, are 2 hay bays; at *B* is the rive-way; at *C*, *C*, *C*, are the hay shoots; at *D* is the stair-way; at *E*, *E*, are spaces on each side of the drive-way for throwing hay down to the cattle; at *F* is the granary. Figure 3 shows the plan of the hay-bay over the granary; *C*, *C*, *C*, being the tops of the hay shoots. All the doors in the building are hung upon rollers. The granary is made of matched boards, and the walls are lined in the same way between the studding and the siding. The basement is floored with plank, with a 2-inch drop behind the horses, and a 4-inch drop behind the cows.

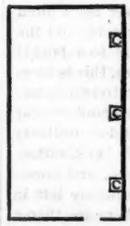


Fig. 3.—PLAN OF HAY-BAY.

HEALTH OF CATTLE.—Here and there we hear of cases of lung-fever, "pleuro-pneumonia," among dairy cows. It is wise to use every precaution to avoid this disease. That it seems to originate in dairies in sporadic cases, would go to prove that, like cholera and other general diseases, it is not "in the air," as is frequently supposed, but that it is caused by some conditions, which arise from the state of the stables, or the animals themselves. Damp, foul air, uncertain and changeful temperature, and the breathing of fetid emanations from filthy stables and manure heaps, all tend to poison the blood, and this is a true blood disease, as may be proved from the fact that it can be spread by inoculation. To prevent disease by observing every sanitary precaution, is always possible, and in case of this dreaded disease, we have little fear of its appearance if these precautions are generally observed. Once started on its course, however, there is no doubt of its contagious character.

Broad Tires to Wheels.

The condition of the roads the past winter, has done more to commend broad-tired wheels, than all the arguments that have ever been uttered. The soft roads have been so cut up with the 1¾-inch wagon-tires, and these have sunk so deeply in the mud that, in some places, travel has been impossible for weeks at a time. Those who have been thus mud-bound, are now convinced that it might have been better for them had the tires of their wagons been 3 or 4 inches wide; but they are still in doubt about the ease of draft of these broad wheels. Now, it should be evident that a broad wheel, that will not sink into the ground, is of much easier draft than a narrow one that cuts in two or three inches. The difference in draft of a narrow and a broad wheel upon the hardest, smoothest road is inappreciable, and it is a matter of doubt if it is in favor of the one or the other. Theoretically, there may be a difference, to a small extent, in favor of the narrow tire, but as our roads are far from being hard or smooth, the difference of draft will be decidedly in favor of the broad tire. A load of manure can be drawn across plowed ground in a broad-tired wagon, by a team that could not move it in one with narrow tires, and the softer the ground, the more apparent will be the difference in favor of the broad wheels. It is to be hoped that the manufacturers of wagons will make the experiment of offering wheels with broad tires; we believe they would soon become very popular.

THE LIGHT BRAHMAS.—In a pretty large experience with fowl raising, for the last thirty years, we have tried many sorts, new and old, and have settled upon the Light Brahma as the best fowl for villagers and farmers. They are a long time in coming to maturity, but there is no difficulty in getting nice broilers from them, in July and August, or in getting eggs from the early pullets in the fall, and that is about all that can be done with the earlier varieties. Well fed pullets, beginning to lay in November, in warm quarters, will give an abundance of eggs through the winter, when they bring the best prices. They are the largest breed with which we are acquainted, adult cocks sometimes weighing 13 to 16 lbs., and hens 10 to 12 lbs. The flesh is of good quality, and when one comes to the table, there is enough to go round and some to spare. They are the most popular of all varieties, tested by the demand for breeding fowls and eggs.

VALUE OF JERSEYS.—A public sale of a number of imported Jersey cows, in the City of New York, at an average of over $400 each, shows that this class of stock is not deteriorating in value. An examination of the cows sold, satisfies us that a lot of equal quality could be picked up in almost any county, where there is a fair sprinkling of Jerseys, at a less price than $400 each. These, however, were imported, and it seems to be true, now as ever, "that a prophet is not without honor save in his own country, etc." There are Jerseys now in America, and scores, if not hundreds of them, that are better than any we see imported, and no other milking stock is so rapidly taking hold of the farmer's fancy as grade Jerseys, especially for butter dairies. The greatest value of a pure breed is in its use for crossing, and the American farmers are fast finding out that the grade Jersey (or Alderney, as it is often wrongly called) is a very valuable cow.

Hints and Helps for Farmers.

BY L. D. SNOOK, YATES CO., N. Y.

OPEN DITCHES. — Intermittent, or occasionally flowing streams cannot be carried off by under-

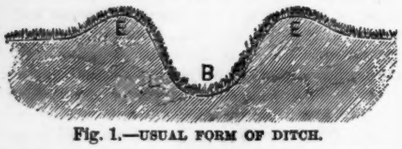


Fig. 1.—USUAL FORM OF DITCH.

drains, on account of the large quantity of water brought down by them at certain seasons. Open ditches are, therefore, necessary to conduct away the water of these courses. Generally, these open

Fig. 2.—IMPROVED FORM OF DITCH.

ditches are a nuisance, because of their improper shape. The usual form is that of a hollow, *B*, fig. 1, with ridged banks, *E*, *E*, by which the ground is made useless when the stream is dry. In the form shown at figure 2, there will be no obstruction to the passage of wagons or mowing machines, the grass in them can be mowed, and the sides and bottom being turfed over, there will be no washing.

Fig. 3.—PORTABLE FEEDING COOP FOR CHICKS.

A PORTABLE FEEDING COOP.—A coop in which

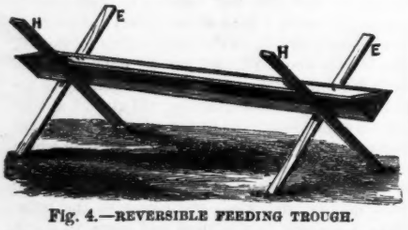


Fig. 4.—REVERSIBLE FEEDING TROUGH.

young chicks, that are permitted to range with the large fowls, may be fed without interference by the others, may be made as shown at figure 3. Common laths are sawn into proper lengths and nailed to a frame, three inches space being left for the chicks to go in and out. On one side the laths are cut off six inches from the ground, and a strip, *A*, 3 inches wide, is secured so as to be raised as the chicks grow larger, to permit them to pass under it. If made 10 feet long and 5 feet wide, it will accommodate 200 chicks. The frames for the sides and ends may be attached to each other by pins, or hooks and staples, and when not in use, they may be taken apart and packed away, until again required.

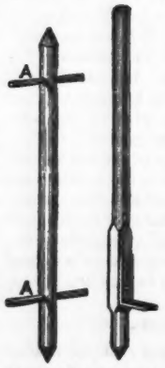
A FEEDING TROUGH.—A device for keeping feed-troughs free from dirt, rain, or snow, is shown at figure 4. Supports are attached to the trough, and extend above it, as at *E*, *E*, *H*, *H*. When the trough is not in use, it may be tilted over so that it will be kept free from water, or rubbish, and always be in a proper condition whenever needed for use.

DIBBLES FOR POTATO PLANTING.—When planting potatoes in rows or hills, the holes for the sets may be made very easily by means of the dibbles shown at figures 5 and 6. The first is made of a piece of hard-wood, 3½ feet long and 2 inches thick, bluntly sharpened at one end. Pins, *A*, *A*, 10 inches long, are inserted near each end, one intended for a handle, the other to be pressed with the foot into the soil, by which the hole is made. The second is similar, excepting that a piece of iron is screwed to the wood for a step, on which to place the foot. By changing the place of the lower pin, or the step, the depth of planting may be regulated.

A CONVENIENT FEED OR GRAIN-BIN.—A feed or grain-bin, made as shown at figure 7, will be found very useful; it is divided into three compartments, and the shelf above will be a convenient place for measures or scoops. It will tend greatly to save feed if the box is provided with lock and key.

A USEFUL CORN-MARKER.—A corn-marker, which will adapt itself to any uneven and stony surface, may be made as follows: A bed piece, *R*, fig. 8, five inches square and 10 feet long, is provided. The marker-holders, *P*, *P*, four feet long and four inches square, are attached to the bed-piece by wooden pins 2 inches thick, *A*, *A*. The markers, *E*, *E*, are 10 inches long and 3x4 inches thick, and are fastened to the holders, *P*, *P*, by 2-inch holes near the ends. The markers are beveled at the bottom, to facilitate their passage over obstructions and make a more distinct mark. At *B*, *B*, are upright sticks, 3 feet long, by which the marker is guided in a straight line by the driver. At the ends of rows, the marker is lifted around by the rear handles.

HITCHING POSTS AND RINGS.—A double hitching post is shown at figure 9. It is made of two posts set in the ground and joined together by a cross-piece, mortised into them. This makes the posts very firm, and not easily loosened or torn out of the ground. Different forms of single posts are shown at figure 10. These require no description. Rings, which may be fastened into posts or barn timbers, are shown at figure 11. One of these is made to screw into the timber; the other is fastened by a staple having notches in it, to render the hold secure.



Figs. 5 & 6. DIBBLES.

Improvement of Corn

This being the month for planting corn over a large portion of the Northern States, some remarks about the means of improving this grain are timely. No crop that we grow has such promising possibilities as this, none is grown with less care as to its improvement. The general yield over the United States, is from 25 to 45 bushels per acre. At the rate of 100 ears to a bushel of shelled corn, this is from one to two ears to two square yards, or only about one ear to a hill under ordinary methods of cultivation. Generally three, and sometimes two, stalks are left in each hill. There are then a large number of barren plants produced. If each stalk bore one good ear, the yield would be from 50 to 150 bushels of grain to the acre. If we could produce three or four ears to one stalk, and leave but one stalk to a hill, with hills 3½ feet apart (3,555 hills to the acre), we should gather from 100 to 140 bushels of grain per acre. If we could grow of the common northern field-corn, three ears to a hill, that is, one ear to every stalk, with hills 3 feet apart, we should gather 145 bushels per acre. The advantage and profit from such cultivation is apparent. The question is, how can we produce such a yield as this? It is well worth the effort to try to do it. Vegetables and animals reproduce their kind under somewhat similar laws. Like produces like in both cases. There are shy bearers in both plants and animals, but we quickly weed out of our flocks and herds the non-productive portion. If we could do the same with our corn-plants, and prevent the barren stalks from shedding their pollen upon the productive ones, we should apply the same rule which stock-breeders enforce in their yards and pens. We might go further than this, and choose seed from the most prolific stalks of a previous year, *selected in the field;* plant these in highly fertilized soil; cultivate the crop perfectly; remove the tassel from each stalk that has no ear, before the pollen is shed; and see that every ear that shows the silk is fertilized with pollen from a productive plant. If this be carefully done for several years in succession, there can be no doubt that the effect upon the production of the crop and the value of the seed, would be highly beneficial.

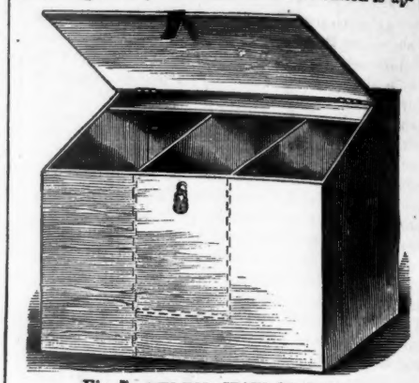


Fig. 7.—BIN FOR GRAIN OR FEED.

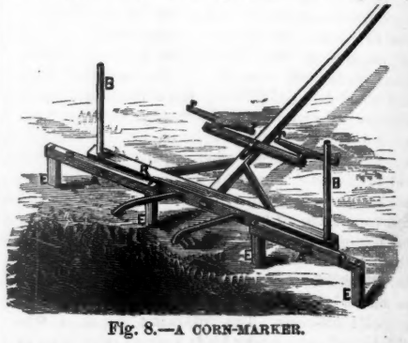


Fig. 8.—A CORN-MARKER.

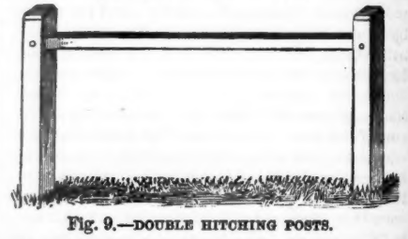


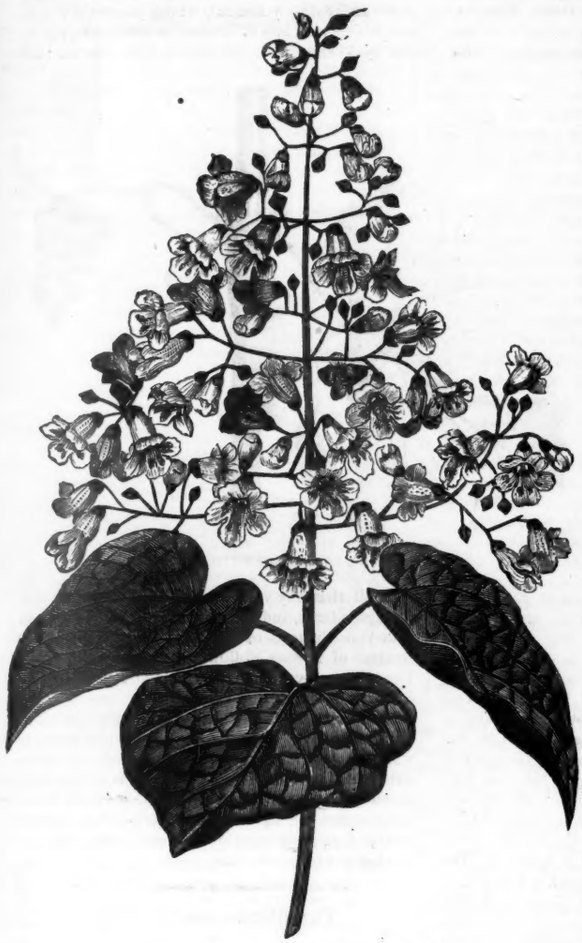
Fig. 9.—DOUBLE HITCHING POSTS.

Fig. 10.—POSTS.

Fig. 11.—RINGS.

The Catalpa and Its Uses.

As indicated in an article by Prof. C. S. Sargent, on p. 142, last month, the Catalpa is likely to receive much more attention at the hands of tree-planters than heretofore. One would suppose that a tree so widely planted for ornament would be generally known, yet there is scarcely any tree that



THE CATALPA.—(*Catalpa bignonioides.*)

we are more frequently asked to name from specimens sent, than this. It is essentially a southern and south-western species, finding its northern limit in Southern Illinois and Indiana, but cultivated much farther northward. In exposed situations in northern localities, the tree is not seen at its best; the head is often very irregular from injury in severe winters, or the breaking of the branches by violent storms, and when naked is anything but an elegant object. When the abundant leaves appear, these deformities are hidden, and the whole aspect is changed. The long-petioled leaves, either opposite, or three in a whorl, are large, heart-shaped, downy on the under side, and of a peculiar shade of green. The flowers appear in June and July in large open panicles, often a foot long, and are produced in such profusion that a specimen in full-bloom is a most pleasing sight. The individual flowers are about an inch long, elongated bell-shaped, with a wavy 5-lobed border, and somewhat two-lipped; they are white, and generally tinged with violet, and spotted within with yellow and purple dots. The flowers are succeeded by long, slender, cylindrical pods, often a foot, or more, long, which hang until spring, and are so conspicuous, especially after the leaves have fallen, that in some localities the tree is known as the "Indian Bean." The pod is divided lengthwise by a partition, forming two cells, which contain numerous very flat seeds, having on each side a wing, which is much cut, and appears like a fringe. Boys often amuse themselves with the pods as substitutes for cigars, the cottony wings to the seeds giving an abundant, and probably innocent smoke. As an ornamental tree, the Catalpa, with many merits, has some faults. As already mentioned, its naked branches are unsightly, and the leaves are among the latest to appear, while they drop with the very first frosts. Its bark, when wounded or cut in the spring, is said to emit a very offensive odor. The honey collected from its flowers is said to be poisonous, though we have seen no direct evidence upon this point. The name, *Catalpa*, is supposed to be derived from the Indians; it was originally described by Walter as *C. bignonioides*, from the resemblance of its flowers to those of the *Bignonia* or Trumpet-creepers; later botanists have called it *C. cordifolia* and *C. syringæfolia*, but these, according to the rules, should give place to the older name. It belongs to the Bignonia Family. Our principal reason for briefly describing the Catalpa, is on account of its economic importance. In most works on trees, its timber is briefly mentioned as "lasting," though Mr. Arthur Bryant in his work gives more importance to this quality, stating that he is assured that posts "have stood for 40 years without the appearance of decay," and advises its cultivation "to a limited extent." Probably the earliest advocate of the Catalpa was General Harrison (afterwards President), who, in an agricultural address at Carthage, O., in 1825, advised farmers to cultivate it on account of its great durability for posts, etc. He, when Governor of what was then the North West Territory, found Catalpa pickets in the old French stockade at Vincennes, which were yet sound, though they must have been in place for a century or more. Later, Doctor Warder and others have given testimony as to its value. Mr. E. E. Barney, of Dayton, Ohio, has, as mentioned last month, done excellent service in collecting the scattered testimony as to the value of the timber of the Catalpa, adding to it important notes of his own, and presenting the whole in a pamphlet. Mr. Barney calls attention to the fact, first pointed out by Doct. Haines, of Dayton, that there are two varieties of the Catalpa; one blooms two weeks earlier than the other, has larger flowers, which are nearly pure white, with larger, longer, and fewer seed pods. Mr. Suel Foster, a well known horticulturist of Muscatine, Iowa, has also noticed this difference, and found the early-flowering form to endure a winter which killed the ordinary kind. He proposes to call this form "*the hardy*," and the later blooming "*the common*" Catalpa. Those who contemplate tree-planting will do well to procure the pamphlet referred to (which Mr. Barney generously supplies for two 3c. stamps), as we can here only briefly sum up the evidence there presented. The valuable qualities of the tree are: ease of propagation; adaptability to various soils; rapid growth; freedom, so far as known, from the attacks of insects, and the great value of its timber, especially as to durability when exposed to the weather, or in contact with the earth. As to climate, Mr. Foster thinks that the common kind can not be depended upon north of St. Louis, while the variety just mentioned has endured the severest winters of Iowa and Illinois without the least injury. That a variety in the color of the flowers, leaves, or fruit of a plant, is often accompanied by a difference in hardiness, and that some varieties are more hardy than the type, is well known to cultivators, and is by no means peculiar to the Catalpa. The seeds are sown in spring in nursery rows, thinned to about a foot, and transplanted when one or two years old, as may be most convenient. In the plantation they are set four feet apart each way; close planting is necessary to insure a straight, clean trunk. In 12 years, each alternate row may be cut out for telegraph poles or fence-posts, and in about 12 years more the remaining trees, in good soil, will make six railroad ties each. Mr. Barney estimates that at the present prices, a plantation of Catalpa will make a return of $25 per acre for each year of the whole time that the trees occupy the ground. Those who have only seen isolated and scraggy specimens, can have little idea of the Catalpa as a forest tree; in favorable localities it has reached a diameter of three and even four feet, with a clean trunk of 50 feet, without a branch. The trunk of this tree is preferred in the south-west for making dug-out canoes, as they neither crack nor decay. The great durability of the timber seems to be well established, and several instances are cited in which posts set in the ground, or logs laying upon it, have been exposed from 70 to 100 years without perceptible decay. The great demand for the timber will be for railroad ties; for this use it should resist the crushing effect of great weight, as well as decay, and should also be able to hold the spikes firmly; so far as tried, the Catalpa ties have proved, when

THE SLENDER-LEAVED LILY.—(*See next page.*)

tested side by side with ties of oak, perfectly satisfactory in these respects. One great advantage of the Catalpa over most other woods, is the inappreciable amount of sap-wood, or "sap," as the immature, recently formed outer layers of wood are popularly called. This, even in cedar and other trees, the heart-wood of which is durable, decays rapidly, but even small stakes of the Catalpa suffer no appreciable loss from this cause. Besides durability, Catalpa-wood possess beauty to a remarkable degree; its general color is a warm buff, the "silver grain" being straw-colored; it takes a fine polish, and is well suited to interior finishing and cabinet work. Mr. Barney, who is known at the West as "the Veteran Car-Builder," sends us specimens of the wood, cut in different directions, with one surface polished; one of these is from the lower end of a bar-post that is known to have been in the ground for 75 years, and though stained a little darker, is quite as sound as the others from trees cut last year. All present a beautiful polish.

One Grape Vine.

SECOND ARTICLE.

In heading our article last month, "One Grape Vine," we did not intend to imply that but one

Fig. 1.—VINE AS RECEIVED.

vine should be planted. The idea we had in view was, that whoever would plant and watch the growth of *one* vine, would understand about *one other* vine—one dozen, one hundred, or more vines. Much mystery has been thrown about the culture of the grape, by those who, not finding the old names given to the parts, sufficiently learned, have

Fig. 2.—A YOUNG SHOOT.

introduced new names for very common things. Then again the jobbing gardeners who go about, and who, unfortunately, are employed in cities and villages, put on wonderful airs. If called to treat a vine, it is sure to have been treated badly before, and only their skill can save it, and they hack away at it, while the owner pays the bill. Now there is nothing simpler than the manner of growth of "One Grape Vine," and as *one* vine grows, so do all the rest. There is nothing about it that the farmer or villager, or that the boys or the girls of the villager or farmer can not understand *if they will*. There is no mystery about the management of a vine. One only need to know its *way* of growing, which can be learned from "One Grape Vine," as well as from one hundred. To go back to last month, and for convenience we re-produce figure 1, here, which shows the vine as it will be received from the nursery and planted. As it comes, it will be a dead-looking stick, with three or four prominent swellings, or buds, and a root at one end. Planted, as directed last month, these buds will start to grow, and as we then advised only one, and this one the most promising of these, should be allowed to grow. This will push out a green, and at first very tender shoot, which should be handled carefully, and be kept tied up to a stake. Now what have you in this *Shoot*, or *Stem?* Watch it as it develops and see! As the shoot grows you have a *Leaf*, opposite that a *Tendril*, to help hold up the shoot; then several inches of stem, and on the other side from the first, another leaf, with a tendril against it, and so on, as long as the shoot grows. The whole shoot is made up of, one after another, a length of stem, three to six inches or so, and a swelling, at which appears on one side a leaf, and on the other side a tendril, as in figure 2. [By some oversight, the tendril opposite the lower leaf has been omitted, it should be there.] This point where these sections of stem join, and at which leaf and tendril are attached, is a *Node*, the space between the nodes, an *Internode*, though it is popularly called a "joint." Should the vine happen to be a very strong one—and this will be seen on all fruiting vines, there will be the leaf, and, instead of the tendril, a bunch of flowers, to be followed by a cluster of grapes, as in figure 3. The tendril is then a part of the vine with a double use. It may serve to hold the vine in place, or it may bear fruit. We will not, just now, consider the fruit, as we wish to get a strong vine, fit to bear fruit next year. The angle between the leaf and the stem is called the *Axil;* in the axil of the leaf, as the shoot grows, will be usually found two buds, as seen in figure 3. If the vine is in vigorous growth, one of these buds will push and form a side shoot. This shoot is generally called a *Lateral*, though other names have been given to it, but lateral is descriptive, and easily remembered. Now with the young vine planted this spring, we wish to get as strong a shoot as possible, and we do not wish any side-shoots, or laterals. If any of these push, as they will be likely to do, so soon as they show a *second* leaf, pinch that off, leaving but one leaf on the lateral. The bud in the axil of that leaf upon the lateral may push out a shoot after a while; if it does, when the shoot from that has two leaves, pinch out the upper one. When we say "pinch," we mean, use the thumb and finger-nail, which will be all the tender growth requires. The young vine, started from one bud, requires just this attention: The shoot should be kept tied up to a stake—for when young, it is easily broken by the wind, or by accident, and if it shows a tendency to push laterals, these should be pinched off to one leaf as above described. Now look at this vine. It has all that any vine has. Watch its growth, now, while young, for all its future growth will simply be a repetition of this. What have you in your vine? You have a root—look out for that, for it is a very important part of the vine; then you have a piece of old last year's wood, from which—if you have followed our advice, you will let just one green stem or shoot grow. It is most convenient to call the stem of the vine, while green and growing, a *Shoot*, but when it has ceased to grow, and it is no longer green, but has ripened and become brown and hard, it is then a *Cane*. What is that shoot? It is made up of Nodes, marked by a swelling, and separated by a few inches of stem; at each Node is on one side a Leaf, and on the other side a Tendril. At the Axil of the leaf, you have two Buds, one of which grows and forms a Lateral, which you must pinch back to one leaf, and if another growth starts, pinch that back, and so on. Well, you have now, in this

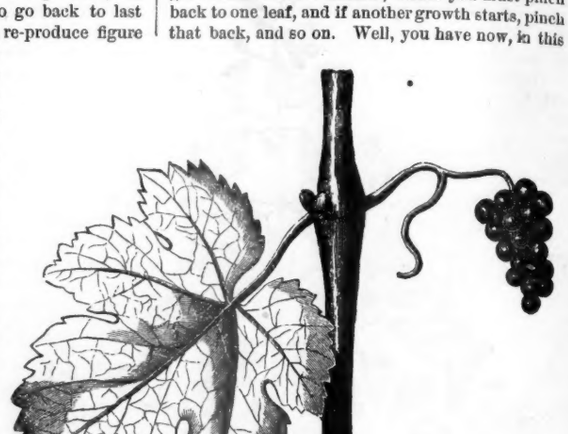


Fig. 3.—A NODE OF A VINE WITH ITS PARTS.

vine, all that any vine has, save that in older and stronger plants, and what you may have next year in your vine—instead of bare tendrils, you may have clusters of flowers, followed by clusters of fruit. Your old last year's stem, which you planted, is a *cane*. Your shoot, that grows from it, will ripen by and by into a *cane*. No matter how large the vine, no matter how it has been trained—or what is worse, not trained at all, these are all the parts with which you have to do. There is no mystery about them—all so perfectly simple that any intelligent youth can understand it. When this manner of the growth of the vine is once understood, all further treatment becomes perfectly plain.

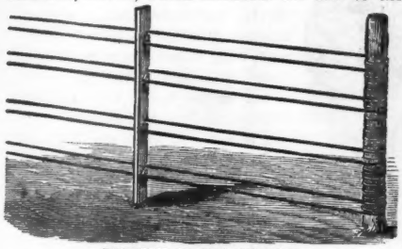
The Slender-leaved Lily.

A collection of the different species of Lily presents a wonderful variety not only in the color and form of the flowers, but in the character of the foliage, and in the size of the plant. From the rare Giant Lily (*Lilium giganteum*), which lifts its flowers 8 and 10 feet above the ground, down to the Slender-leaved Lily (*L. tennifolium*), which contents itself with as many inches, there is a wide interval, which is in good part filled by other species of varying stature. There are other lilies of as low growth as this slender-leaved one, but none so delicate in all its parts. This has a bulb about the size of a walnut; its stems, from 8 to 15 inches high, bear on the lower part scattered leaves, which are so narrow that they appear more like those of a grass than a lily; the upper part of the stem is nearly leafless. The flowers are one to six, nodding, and of the size and shape shown in the engraving (on p. 181); they are of the deepest scarlet, without any spots, and have a shining surface; the pollen is of a brick-red color. In none of the accounts we have seen of this species, do we find any reference to its odor, which is quite as distinct as any others of its characters; it has not the oppressive sweetness of the Gold-banded Lily (*L. auratum*), but has a spring-like freshness most enjoyable. The drawing for the engraving was made from a forced specimen, which, when but one of its three flowers was open, delightfully perfumed a large room. This species is a native of Siberia, and though it has been in cultivation for over 50 years, is still a rare plant. It

is perfectly hardy, so far as cold is concerned, but it can not endure a moist soil, and unless a specially well-drained bed can be given it, the French cultivators advise to cultivate it altogether in pots. It is altogether too fine a plant to be scarce, and we hope our cultivators will take pains to multiply it.

A Wire Trellis for Peas.

The sticking of peas is a job which gardeners would gladly avoid, as it is often difficult to secure suitable brush, and the time occupied in collecting brush and setting it is no small item. A few years ago, we figured a pea-hurdle, such as is in use in England, but this is rather costly, and takes up too much room when not in use. Mr. Z. Mills, Jr., sends an account of his method of using wire to support his pea-vines; he has employed this for several years, and finds it greatly superior to brush. The peas are sown in double rows, six inches apart, care being observed to have the rows true. A post six inches in diameter, either round or half round, is set at each end of the row; it is placed three feet in the ground, and is as high as the vines require; the earth should be pounded firmly around the posts to prevent sagging. The wire used is galvanized iron, No. 18, which measures 150 feet to the



PORTION OF PEA-TRELLIS.

pound. When the peas are tall enough to need support, the wire is attached to a post, about six inches from the ground, carried to and passed around the post at the other end of the row, and back to the starting point; here it may be made fast and cut off, but Mr. M. prefers to take two or three turns around the post, and leave the coil hanging there until another stretch of wire is needed. When the vines grow 8 or 10 inches above the first wire, a second wire is stretched in the same manner as the first, and so on until the vines cease growing. Plasterer's laths, or other strips, or bean poles, are put every 15 feet in the row as stakes to support the wires, if they sag with the weight of the vines; the stakes have notches cut to receive the wires, or these may be tied with a cord or a short piece of wire. If the rows are over 300 feet long, another post should be set midway of the row to relieve those at the end of too great a weight. When the crop is gathered, the wire is removed and wound up on a reel, and the posts stored in a dry place, ready for another season. Mr. M. trains Lima and other pole-beans in the same manner, using for these a single wire, instead of passing it on both sides of the posts, as for peas. He is sure that he can get a larger crop from beans trained on wires than from poles, but at first some care is required to train the vines, and get them properly started.

THE POTATO-BEETLE.—The experience of last season has shown how easily the potato-beetle may be vanquished. Notwithstanding this pest, potatoes are plentiful in New York markets, at $1.50 a barrel, and farmers seem to think that these prices are better than those for most of their products. The fight with the beetle, to be successful, must be swift, short, and sharp. No other remedy is so certain as Paris Green for the larvæ, and hand-picking for the first crop of the beetles. Hand-picking early in the season, prevents the deposition of thousands of eggs, and every egg destroyed, diminishes the late crop by hundreds or thousands. If farmers would only work for one year, and destroy the beetles as long as one is to be seen, sparing none of the late crop, there would be an end of them, practically, for ever afterwards. To spare the latest brood, is to save seed for the next season.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Home Topics.

BY FAITH ROCHESTER.

How to do a Washing.

Washing-machines are usually accompanied with printed directions for their use, but in more than half of the families throughout the country, no machine is used. The old-fashioned washboard is the main reliance. Perhaps washing does not come under the head of "skilled labor;" it is generally supposed that any one who has strong arms and back can do this work; but certainly something more than mere strength is required to do a washing *well*. There is a great difference in washings, as I can see in comparing my present task with ten years ago. I not only have more pieces in the wash now, but the majority of them are much harder to cleanse: this is because there are children in the family, who play out-doors in all kinds of weather. Knowing this, I am not likely to be deceived by any advertisements of machines, or soaps, or washing-fluids, which promise to do "the family washing" in an hour or two without any hard rubbing. It may all be true about some washings, but not about mine.

Many advise that the white clothes be always put in soak over-night before washing. I have not found enough help in this to pay for the trouble. I almost always use some kind of washing-fluid, or chemical soap, especially in summer, when most white clothes are used. In winter, a free use of flannels, which are easily washed, makes the work lighter. Clothes that are much soiled should not have hot water poured upon them, or be put into clear hot water, which "sets" the dirt. A hot soap-suds does not have the same effect. Yet I should prefer to wash stained articles in moderately warm suds, before putting them into hot suds. Many fruit stains are removed by pouring boiling water through the spots, but other stains cannot bear this treatment. Make, then, a good strong suds, as hot as the hand can bear. Add washing-fluid if you can, unless you have some kind of "electric" or "detersive" soap. Put in pieces to the amount of three or four or five shirts, according to the size of the tub, and amount of water. Of course, we wash first the finest, or least soiled articles. Let them soak in the strong suds a little, from five to fifteen or twenty minutes. Keep plenty of hot water in the boiler, and, to this end, fill it up whenever we take any out, keeping it somewhere near half full. If we use hard soap, it is best to shave up two-thirds of a bar, (or less if the washing is small), and dissolve it in a quart or more of hot water, upon the stove. Make the suds of this. With a good suds, and with a short soaking, the shirts, pillow-cases, fine shirts, and the under-garments of cleanly people, ought not to need much rubbing. After the first lot of pieces has been washed, wrung out, and dropped into the basket, put another lot in, adding more of the dissolved soap, or more hot water if needed. Some of the suds from the tub may be taken out first, in which to soak the especially soiled garments. When the suds in the tub becomes considerably dirty, prepare a clean suds, and in this begin with the white table-cloths, napkins, and dish-towels, if it is desired to keep these separate from articles of clothing, as some do. Many do not care about this, aiming to have every thing so clean when it has been washed, boiled, sun-dried, and ironed, that it may be put to almost any purpose. Each housekeeper must use her own judgment about what to put in first, or into the suds when it is clean. If white flannels are to be kept clear and white, they must be washed in clean suds, and rinsed in clean warm water; so never put them in at random among other clothes. As soon as you have taken out the last hot water needed for washing the white clothes, put more cold water in the boiler, and put into it the finest and whitest part of the white clothes. If you have used very strong suds in the washing, it is not necessary to put more soap into the boiler, but most house-keepers do add soap, or soap and fluid. A thorough scalding is the main thing now. The water should be heated to boiling, and should boil from five to twenty minutes, according to the quantity of clothes in the boiler. Long boiling in suds makes clothes yellow. After the clothes are thoroughly scalded through the mass, I see no benefit in continued boiling. Stir them about, (or poke them down), with a clothes-stick. Set an empty tub near the stove, and take clothes from the boiler into this with the stick. When the tub is again on its bench, pour into it two or three pailfuls of cold water. Put another lot of clothes into the boiler, and proceed to "suds" the first lot. That is, rinse them well—rubbing wrists or children's drawers if not yet clean, and wring them. Take the others from the boiler, and suds them in the same tub. The sudsing water is then warm enough, and clean enough for washing the colored clothes. There is probably too much of it, and you can put some of it back into the boiler. If you have many colored clothes, you will need more than one suds for them. They should not lie in soak. White calico, with black figures, may be washed and boiled with the white clothes. Colored cotton or linen articles, may be rinsed in the water which has rinsed the white clothes, unless they are very dark colored or black, so as to show white lint, in which case they need clear water. They should be starched at once, and hung in the shade, if convenient.

Protection from Moths.

In May the clothes-moth begins to fly about our rooms. It is a small, light buff-colored "miller," dainty and beautiful on close inspection. Its highest mission seems to be to teach us to set our effections only upon incorruptible treasures which "moth and rust can not destroy." But it is necessary to keep a sharp lookout for the safety of our furs and flannels, and we must wage war upon it. In the first place we must carefully put away everything we can, upon which it will lay its eggs. If we pack away our furs and flannels early in May, before the moth has begun to lay its eggs, and leave them in boxes or bags so tight that the flying-moth can not squeeze in, no further precaution is necessary. Clean *paper* bags are recommended for this purpose—those used for flour and meal bags. They should be without holes or openings anywhere. These bags, when filled and closed firmly, may be put away on closet shelves or in loose boxes, without danger to their contents, so far as moths are concerned, without need of camphor or other strong odors to drive moths away. Furs are usually sold in boxes, in which they may be kept. Beat them well when you finally put them away for the season. If you delay putting them away until June, examine the furs well, and shake and beat them very thoroughly, in order that any moth-eggs that may possibly have been laid in them may be thoroughly removed or killed. Furs sealed up early in May need no camphor or tobacco or other "preventive." Muff and tippet boxes should be tied up securely in bags, or made safe by mending holes and pasting a strip of paper around the junction of the cover with the box below, so as to close *all* openings. Woolen garments must not hang in closets through the summer, in parts of the country where moths abound. They should be packed away in tight trunks or boxes, or sealed up in bags. Woolen blankets must be well shaken and carefully put away, unless they are in daily use. Early in June the larvæ of the moth begin their ravages, and now, unless you who dwell in places where clothes-moths are not found, look sharp, you will find some precious thing that you have forgotten—some good coat unused for a few weeks, or the woolen cover of a neglected piano, already more or less riddled by the voracious moths. It is their nature to eat until they have grown strong enough to retire from the eating business, and go into the chrysalis condition.

Some things can not well be packed away in tight boxes and bags, and among these it is well to scatter small lumps of camphor or clippings of Russia leather. Some use tobacco, though I think

camphor is usually preferred. It is said that powdered black pepper, scattered under the edge of carpets, will preserve them from attacks. Dr. Harris says that "the cloth lining of carriages can be secured forever from their ravages by being washed or sponged on both sides by a solution of Corrosive Sublimate in alcohol, made just strong enough to leave a white stain on a black feather."—I have lived most of my life where none of these precautions were necessary, but I shall never forget the shame I felt, during the first year of my house-keeping, when I discovered the wide-spread damage done in my house, before I had even thought of such a thing as moths.

Care of Winter Bed-clothes in Summer.

In a sister's letter I find some good suggestions about the proper keeping of unused bedding. Before she came West she had plenty of good roomy closets, but now she lives in a house with only one small clothes-room. So she manufactures closet-room out of dry goods boxes. A medium sized box, turned up on one side, with cleats nailed on the ends inside the box, for two shelves, affords room to pile away her bed quilts nicely folded; and then she covers them with newspapers, tucked under all across the front, so as to exclude dust. From the top of the box she hangs a curtain, and covers the whole with a cloth or with paper, using the flat top for a table to lay piles of papers and magazines which she wishes to preserve. I have previously described a table made of a dry goods box, by turning it on its side and elevating it on legs. Such tables are excellent places for packing comforters and quilts The bed-clothes should be well aired on the clothes-line in the sunshine, before putting them away. If blankets are packed away in these box tables, they must be especially guarded from moths, as previously directed.

Bean Soup.

A friend recommends this as the best: Soak the beans over night. Boil three hours, or until very soft. Strain them through a colander and, after placing the soup again over the fire (to heat, but not to boil more than a minute), season for one pint of beans as follows: One teaspoonful each of sugar and salt, half teaspoonful pepper, teacupful of milk, one tablespoonful of butter, and one beaten egg.

Potted Ham.

In warm weather it is difficult to keep ham that has been cut. The following plan is safe and good. Cut all that will make good slices, and fry as for the table Lay the pieces close and even in a stone jar, packing them snugly and pressing them down. Pour all the hot fat over them, to fill the spaces and exclude air. Lay a plate over the top with a stone upon it Keep in a cool, dry place, and you will find it nice and convenient all through warm weather. When wanted for the table, lay slices in the frying-pan, and only heat them through without more cooking. Be careful to keep the top of the jar covered carefully, so that flies may never gain an entrance.

How to Bake a Ham.

A good way to cook a ham, is to bake it. Soak about twelve hours. Wash very clean, trimming away any rusty parts. Wipe dry, and cover the part not protected with skin, with a paste or dough made of flour and hot water. Lay in a dripping-pan, with the paste-covered side upwards, with enough water to keep it from burning. Bake until a fork pierces it easily, allowing about twenty-five minutes to each pound of the ham. Baste occasionally with the drippings, to prevent the crust of paste from cracking off. When done, peel off this crust and remove the skin of the ham It may be served as it is, or it may be glazed.

To Glaze a Ham.

Brush the ham over with beaten egg. To a cup of finely powdered cracker, allow enough rich milk or cream to make into a thick paste, add a little salt, and work in a teaspoonful of softened butter. Spread this evenly over the ham, a quarter of an inch thick, and set it in a moderate oven to brown.

Rhubarb Pie.

Some very early Rhubarb, with tender red stems, does not need scraping or skinning, or anything but simply washing; but usually the first thing to be done, is to strip the stems of the tough skins. Cut into half inch slices, and lay them evenly on the undercrust. Scatter over this a teacupful of sugar and a tablespoonful of flour. Wet the edge of the undercrust all around, and press the edge of the uppercrust neatly to it. Dip the fingers in flour and pass around the cut edge, to make it close well, so that the juice will not be lost. Care is needed that it does not bake too fast (the most common cause of running over), yet it does not want a slow oven.

Gardening for a House-keeper.

"Mrs. J. R. S." goes to the country in May, and stays until October. They keep a man to care for the horse and cow and the vegetable garden. "Mr. S." comes from the city at evening, and goes back in the morning; and whatever of flower gardening is done, must be done by the Madame herself, with such help as the man can afford. The cottage has a fair-sized front-yard, with grass in very good condition; there are a few shrubs, but they all flower early, and are soon done with, and she wishes to break up the uniform green, and put a spot of bright color on the lawn, but she would do this at a very little expense, and with the least possible labor. No doubt this is the case with many other house-keepers—they would like to know how they can do a bit of ornamental gardening inexpensively, both as to outlay of money and labor. For such purposes, they must rely upon Annuals, and to produce the best effect, these should be in masses. The accompanying diagram, fig. 1, is of some beds made a few summers ago by a neighbor of ours, which were very successful, indeed more effective than the gardens of some of her neighbors, where a gardener was kept, and a vastly greater expense incurred. Here we have an oval bed, with a curved bed at each side, and a small circular bed at each end; the simple outlines are in much better taste than the stars, hearts, and such figures as are often attempted. It is not easy to make an oval by the eye, but very easy with two sticks and a string, as shown in figure 2. At *a* and *b* are two stout sticks, put firmly in the ground. The dotted line is a cord, or strong twine, made fast to another stick at *c*, which is to serve as a marker. By moving the stick *c* in either direction, keeping the cord tight all the while, a regular oval may be traced, which will be narrower or broader, as the cord is lengthened or shortened. On the bare ground, the outline may be scratched by the stick *c*; but as the bed is to be made in the grass, a number of sticks, one say for each foot or so, will be needed—bits of lath, or any twigs, will answer; these sticks are to be used to mark the outline, and one is to be stuck into the ground every foot or so at the places indicated, by moving the stick *c*. When the outline is satisfactory, the turf should be carefully cut with a sharp spade, following the sticks as a guide, and taken up and removed. It will then be easy to lay out the two curved and two circular beds, which should have the turf removed from them in the same manner. In the case referred to, the oval was four and a half feet wide, the two circles four feet across, and the curved beds three feet wide; the width of grass left between the different beds was two and a half feet, to allow the mowing-machine to be readily used. If the turf has been neatly taken off, probably no soil need be added; some well-rotted manure should be given, and the beds well forked over, and the soil made fine and mellow with the fork and rake. Now for filling the beds. The center one was filled with the *Petunia*, the "Countess of Ellsmere," which is one of the best bedders; a rather small flower, but of good substance, of a deep rose-color, with a white throat, and very lively. This may be had of most seedsmen, but, of course, any other will do, if preferred. For the curved beds, two colors of *Phlox Drummondii*, the catalogues allow quite a selection. For the circles, both may be filled with *Dwarf Convolvulus*, the bright blue or purple variety. These selections can be varied indefinitely, but those named are of annuals that are really effective, and, what is quite important, last long in bloom. They may be sown in the beds, and thinned afterwards, but it would be better to sow, at least the Petunia and Phloxes, in boxes, the seeds are so fine; and when the plants are large enough, transplant to six or eight inches apart each way, all over the beds. If a bolder effect is desired, a Castor-Oil plant may occupy the center of the oval, surrounded by the Striped Japanese Maize, the four outer beds being planted as before suggested. Either of these arrangements will be very brilliant and satisfactory, at an outlay of only 50 cents for seeds.

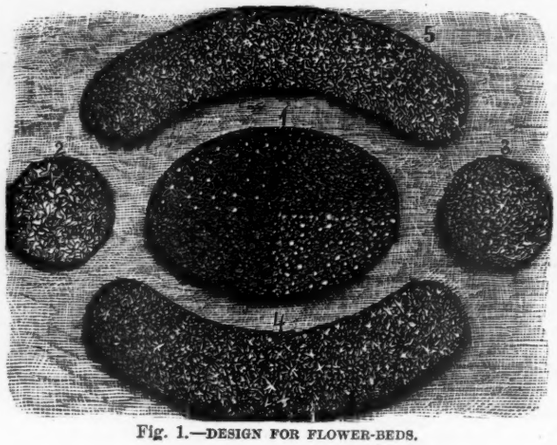


Fig. 1.—DESIGN FOR FLOWER-BEDS.

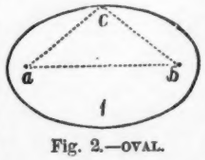


Fig. 2.—OVAL.

Women's and Children's Shoes.

"R. K.," Hartford, Conn., wishes a recipe to make a dressing to use upon the shoes of the women and children; one that "will polish, will not crack, and will be good for the leather." There are various preparations sold, but R. K. is tired of buying them, as their chief expense is for the bottles, which when empty accumulate, and are not useful for any other purpose. The only article of the kind with which we have had much experience, is the old-fashioned "Sponge-Blacking," which has been in use for a half century or more. It is simply a Shellac varnish, and is probably not especially "good for the leather"—a matter of not much importance for the shoes of women and children, the uppers of which, under any circumstances, outlast the usually thin soles. To make this, put half a pound of gum shellac in a wide-mouthed bottle, or fruit jar, and cover it with *strong* alcohol; loosely cork, and set this in a sauce-pan of cold water, placing under it a small piece of board, a couple of sticks, or whatever will keep the bottle from direct contact with the bottom of the sauce-pan. Set the pan on the stove, and allow it to heat up gradually, and keep the water at the simmering point, stirring from time to time with a stick, until the shellac is dissolved, which it should be in half an hour or less. Recollect that the vapor of alcohol is very inflammable, and it must be kept from contact with the fire. When the shellac is thoroughly dissolved, remove the bottle from the sauce-pan, and add one ounce of lamp-black, stirring thoroughly, until all lumps are removed. If too thick, as it is likely to be, add more alcohol to make it thin enough to apply readily with a brush, or by means of a sponge attached to a wire. Keep well stopped, and if it becomes thick by the evaporation of the alcohol, add more. This applied, as a varnish, to leather, rubbers, etc., dries at once,

and leaves a bright gloss. It can only injure leather mechanically, several coats will made it stiff, which may be avoided by occasionally oiling the leather.

A Dressing for Patent Leather. — When patent leather boots or shoes lose their original lustre, they may be revived by a very simple dressing. Sugar one pound; Gum Arabic, in powder, one ounce; Ivory-Black, one pound. Add a pint of water, and boil together, stirring, until the Gum and Sugar are well dissolved. If two thick to apply smoothly, add more water. Let stand for a few hours for the coarser portions of the ivory-black to settle, then pour off and bottle. This is to be applied to the patent leather with a soft camel's-hair, or badger-hair brush. When a new application is to be made, the former coat, if too thick and stiff, may be removed by washing it off with a damp cloth. This renews the lustre of patent leather perfectly, and was given us by a gentleman from Europe, who paid his French valet a round price for the secret.

Household Notes and Queries.

A Good Preparation of Veal.—This being the "veal season," the following is an excellent mode of preparing it to be eaten cold, and for keeping it on hand for several days, ready for immediate use: Take say 3½ lbs.—the thick part of the leg is preferable, with the tough tendonous parts removed—chop it fine without cooking; mix well with it 4 soda crackers rolled fine, 3 well-beaten eggs, 1 tablespoonful of salt, 1 teaspoonful of pepper, ½ nutmeg, 2 tablespoonfuls of cream, or a small piece of butter. Make it into a loaf, and bake in a dripping-pan without water, with quick heat at first, to close the outside and retain the juices, and continue the baking about 1½ to 1¾ hour. Serve cut in thin slices. An excellent lunch in traveling.

Another Way to Cook Veal. — In England everybody goes to the races, and great preparations are made for the lunch on those occasions. Veal prepared in this manner is a favorite at the race lunch, but will be found useful at other times. Butter a good sized bowl, and line it with thin slices of hard-boiled eggs. Have veal and ham both in very thin slices; place in the bowl a layer of veal, with pepper and salt, then a layer of ham, omitting the salt; then a layer of veal, and so on alternating with veal and ham until the bowl is filled. Make a paste of flour and water, as stiff as it can be rolled out; cover the contents of the bowl with the paste, and over this tie a doubled cotton cloth. Put the bowl into a saucepan, or other vessel, with water just up to the rim of the bowl, and boil three hours; then take it from the fire, remove the cloth and paste, and let it stand until the next day, when it may be turned out and served in very thin slices.

Gasoline.—"C. T. M.," Bolivar Co., Miss., asks: "Is *Gasoline* any more dangerous to use for burning than coal-oil, and what is its composition?"—Without knowing what our correspondent means by "coal-oil," we can answer that Gasoline is *eminently—fearfully dangerous*, and should not be used in any lamp whatever. To answer his question as to composition in general terms, we may say that Petroleum, as it comes from the wells, is a mixture of several distinct compounds of carbon and hydrogen. The products from different localities vary greatly, but they are all mixtures of hydro-carbons, which are distinguished especially by a great difference in their boiling points. If petroleum be placed in a still, and heat gradually applied, first *Rhigolene*, will pass off. This has the lowest boiling point of any liquid, as it boils at 65° Fah. Then when the heat is raised to 120° Fah. *Gasoline* will pass off. At 180° *Naphtha* will be distilled; of this there are three kinds; one boiling at 180°, another at 220°, and another at 300°. When the heat is raised to 350°, the liquid which passes off is known as *Kerosene*, and there are others that boil at higher temperatures than this. This is the only petroleum product that can be safely used, and Gasoline or Naptha alone, or, as they unfortunately sometimes are, mixed with Kerosene, should be avoided. While there are contrivances for burning the vapor of Gasoline mingled with air, as a substitute for gas, and for aught we know, some of these under proper management may be safe, there is no way, no lamp, in which the liquid *Gasoline*, or either of the *Naphthas* can be safely burned. Who ever does this, assumes a risk he has no right to take, and exposes others to dangers fearful to contemplate. Let them all alone!

Yeast.—"Mrs. C.," of Hawley, Minn., finding the preparation of the yeast, in providing bread for a large family, to be no little labor, has simplified the matter as follows: "When the potatoes are boiled for dinner, I pour the water in which they have been cooked into a pitcher, setting it aside to cool. By the time dinner is over, it is about the proper heat. I then add a tablespoonful each of sugar, salt, and flour, mix together thoroughly, and pour this into the yeast-jar, which, of course, has left in it some of the old yeast. In this way I have always fresh, good yeast on hand, with comparatively no trouble."—This is not very definite as to quantities—of course it refers to water from peeled potatoes; but the plan of adding fresh materials to the yeast-jar is a good one.

Cottage Pudding.—"H. M. J." If one wishes to prepare a dessert hurriedly, or when an unexpected visitor comes on a day when the dinner is somewhat meagre, this pudding answers an excellent purpose, as it is easily and quickly made, and "very filling for the price." The materials required are: Flour, three cupfuls, or sufficient to make the batter; Butter, one tablespoonful; Sugar, one cupful; Eggs, two; Milk, one cupful; Soda, half a teaspoonful; Cream of Tartar and Salt, of each, one teaspoonful. Mix the Cream of Tartar with the Flour, beat the Whites of the Eggs. Put the Butter, Sugar, and Yolks of the Eggs together, then work in the Milk, Soda, and Salt, adding gradually, the Flour and Whites of the eggs. There should be flour enough to make a fairly stiff batter. Butter a mould or dish, and bake. It may be turned out, or served from the dish. To be eaten with any liquid sauce.

Lemon Pie.—The grated rind and juice of one Lemon, one teacupful each of White Sugar and boiling water, one tablespoonful each of Butter and Corn-starch, one Egg. Begin by creaming together the butter and sugar. Mix the corn-starch with a little cold water, and stir this into the boiling water. Pour this hot starch mixture over the sugar and butter, stirring together. While it is cooling, beat the egg and prepare the lemon. Stir all together, and bake with one crust.

Carpet Moths.—"W. W. B." We have published it once before; but it is seasonable, and we will give it again. These moths are mostly under the edges of the carpet, but take refuge in the cracks of the floor and under the base-board. Fold a sheet or other cloth to a handy size, wet it, and lay it upon the carpet; then have several flat-irons quite hot, and iron the cloth. This will drive the steam through the carpet and into all the cracks. By persevering with this, at intervals of a few days, to catch those that have hatched after the application, you will soon overcome them. Repetition is important in all battles with insects, as eggs often escape the treatment that kills the insects.

RECIPES WANTED.

A house-keeping friend asks for a recipe for making Scrapple, said to be a popular breakfast dish in Philadelphia. We think it is a modified kind of head-cheese—will some one tell how to make it?

Apple Dumplings, Steamed.—"Mrs. H.," of Niagara Co., N. Y., fails to make Steamed Apple Dumplings to exactly suit the taste of "Mr. H." Will some of her house-keeping sisters help her?

Rye Flour.—"Mrs. A." of Erie Co., N. Y., would like to know the best method of making Rye-bread, and for using rye flour generally. They can raise excellent rye, but have to buy all their wheat.

"Salt-Raising." — "A Subscriber," very sensibly prefers "yeast-bread," but would like to know how to make other kinds to use in an emergency.

"The Queen of Puddings."—"Mrs. D.," of Brenham, Texas, saw a recipe for this, several years ago. Can any one give us the recipe to publish it for the benefit of her and others?

BOYS & GIRLS' COLUMNS.

Aunt Sue's Chats.

A Card-Basket.—"K. B. W."—I know of no better pattern for "a card-basket of perforated card-board," than

Fig. 1.—Pattern for Card-Basket.

that with a hexagonal base and six five-sided pieces around the sides. Figure 1 shows you half of the sides sewed upon the base. Let each side of your hexagon be exactly one inch and three-quarters wide. Cut your side-pieces of the shape of figure 2. (You will see the dimensions marked upon it.) Bind the pieces around, with narrow lute-string ribbon. You can either work some little design on each piece with silk or worsted, or you can stick a little picture upon each. Overhand the pieces together (as seen in fig. 1). Be careful to sew to the

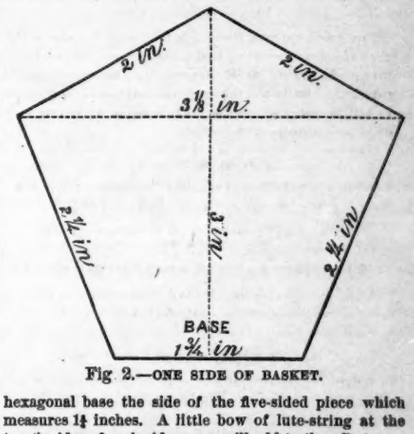


Fig 2.—One Side of Basket.

hexagonal base the side of the five-sided piece which measures 1¾ inches. A little bow of lute-string at the top (inside) of each side seam, will add to the effect.

Red Japan Varnish.—"J. D. F."—The simplest way to make this, is to procure a stick of the best red sealing-wax, break it into small pieces, and drop it into a wide-mouthed bottle; then cover the sealing-wax with strong alcohol; cork the bottle, and set in a warm place. When thoroughly dissolved, it will be fit for use. You can dip your little twigs in it "to make them look like coral." The varnish soon dries, so you can give several coats, if needed, without much trouble. Poor sealing-wax will make an unsatisfactory varnish. Buy of a stationer, who knows what a good article is.

Polishing Shirt-Bosoms.—Selma wishes me to tell her "how to give a glossy appearance to shirt-fronts and collars, such as they have when new."—I can tell you, Selma, how to make the starch, but a great deal depends upon the ironing. Make a quart of starch the usual way, but see that it is very smooth and very thoroughly boiled. While hot, stir into it a piece of spermaceti, about as large as a hickory nut; then add a tablespoonful of gum-water, and stir all well together. You can always keep the gum-water prepared. The proportions are, two ounces of gum Arabic to one pint of water; but you had better make only half the quantity if you use it but once a week, as it spoils, especially in warm weather. But after making the best possible starch, you can not make the linen look "like new" without a "polishing-iron." These are sold at the furnishing stores, and are like a common flat-iron, but with rounded edges, and a highly polished steel face. It is hard rubbing with an iron of this kind that gives the new articles and those from the city laundries their peculiar gloss.

Crackers.—Beltine had no success with her crackers; who will tell her how to make them?

I. T. E. asks me for a "description of printing done in old times, materials used," etc.—Some say that the Chinese printed from engraved blocks of wood, fifty years before the Christian era. Then we hear of it in Venice in the fourteenth century, where they fastened a page of manuscript on to the face of a block of wood, and engraved

the letters as written. In 1450 metal blocks were substituted for wooden ones. Peter Schœffer (son-in-law of John Faust) introduced movable metal type. The Mentz Bible is the first important specimen of metal-type printing, supposed to be published between 1450 and 1455. The Italic type was the invention of Aldus Manutius, the celebrated printer at Venice, about 1500, and dedicated by him to the States of Italy, from which it took its name.

I. T. E. sends a puzzle for the little ones to draw on

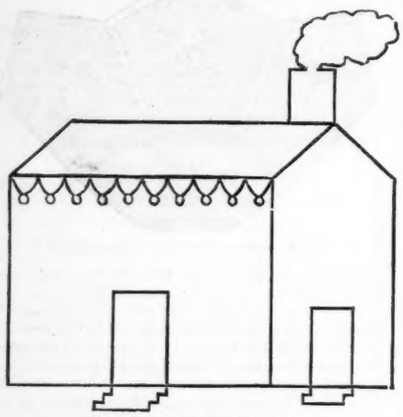


Fig. 3.—PUZZLE DRAWING.

their slates, (see fig. 3). They are to draw it without crossing a line, and without removing the pencil.

THE CAT AND THE RATS.—It is quite a long time since the cat and rat problem had a run, so we will start it on its rounds again. D. F. B. sends it to us this time. If 3 cats kill 3 rats in 3 minutes, how many cats will it take to kill 100 rats in 100 minutes?—I shall be happy to receive solutions to this.

Thanks, for letters, puzzles, etc., to Lee Sharp, H. S. Bean, H. Ashland, Jacob H., F. D. C., Benny, Lizzie D., Martin M. S., Cyrene G., "Rev." Monticello, (I am always pleased when the seniors join in the fun), and to Theo. F. S.

The Doctor's Correspondence.

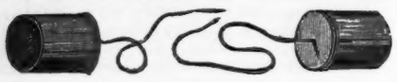
I have been expecting it, and it has come at last—indeed, several have come—requests that I would tell the youngsters

"All About the Telephone."

Those who request another to tell them "all about" anything, have little idea how much they ask. Very few people in this world know "all about" anything. I say that I expected the request, because so many accounts of the wonderful doings with the Telephone, have been given in the papers all over the country, that I was very sure that some of my youngsters would wish to know about it. So before the first of the requests came, I examined the Telephone very carefully, intending to say something about it, even if you did not ask, for it is really a wonderful thing, and a great wonder about it is, that the accounts, for once, have generally been very true. In the first place we must ask

"What is a Telephone?"

for there are several of them. Its name gives a hint as to its use. You know that a *Tele*scope allows one to see things that are far off; a *Tele*graph allows one to write at a great distance, and you are prepared, from the resemblance of the word *Tele*phone, to know that it has something to do with distances. The name means to sound a-far off, but with the present instruments it is not merely a sound, but it carries voices and words, and by it persons can converse when miles apart. When I first saw the Telephone, I went to the "Tribune" Building, which is just across the Park from the office of the *American Agriculturist*, and there found Mr.



THE STREET TELEPHONE.

Applebaugh, whom I had known in telegraph matters, in charge of the Telephone. Although he has to do with *Tele*, or "far off" things, he is by no means a *distant* person himself, but showed me the Tele-phone inside and out. A wire extended from his office up to the building of the American Institute, where the Fair was being held, and distant three or four miles, at least. He took up a sort of wooden pepper-box, and introduced me to a lady at the Fair. He gave me another pepper-box to hold to my ear, and I heard very distinctly that the lady was "very glad to see me," though how she could "see" through three miles of brick buildings, I could not understand. We talked a while, every word being perfectly distinct, and after that Mr. A. asked her to sing, when "Red, White, and Blue," was very neatly done; then another lady having joined the one at the Fair building, I had a pleasing duet. These are some of the things the Telephone will do, and you want to know

"How Does It Do It?"

The Telephone is no new thing, for there were attempts of the kind years and years ago, but it is only of late that it has been a success, because Prof. Bell, and others, have hit upon the present way of doing it. To understand the Telephone now in use, you must know a little about electricity and the magnet, and something about the laws of sound. Let us leave the electricity for the present, and see how much you know about sound.

Why Do We Hear a Sound or Noise?

Something must set the air in motion before we can hear anything. If you throw a pebble into still water, you see the little waves form a circle, which spreads, and spreads, so that after a while they strike the shore or spread so that you can not see these rings of waves, they become so small. When you clap your hands, you make similar waves in the air to those the stone makes in the water. They spread in all directions until they strike some one's ear; the waves of the air hit the "ear drum," which is like a drum-head. A stretched membrane, or kind of skin, that takes on the motion from the waves of air, sets some little bones—very curious they are, too—to shaking, and finally the disturbance in the air, caused by your "spatting" your hands together, gets through the ear-drum, the little bones and other parts of the ear to the brain of another person, and he *hears* the noise. Sounds of all kinds, from the least whisper, and the softest musical note, to the thunder, all come to our brain—are heard, through a disturbance in the air, which is set in motion in one way or another. Now the Telephone is a contrivance for disturbing the air in a particular manner, so that it will repeat the sounds of music, or of a voice, at a great distance—50, or 100, or more miles. The contrivance by which this is done, I must tell you of at another time. The Telephone repeats a sound at a distance, by the vibration of—what do you suppose?—a plate of iron! The arrangements of the very simple parts for doing this, I will try to show another month. That vibrations caused by the voice may be carried a long distance, is shown by the little toy now called the "Street Telephone," but which, a few years ago, was sold as "The Lovers' Telegraph." This is easily made of two tin cylinders; mustard, or spice boxes, with the bottom knocked off—placing the box on the stove, until the solder which holds the bottom is melted. Over one end of each cylinder is tied a piece of wetted parchment (no doubt bladder would answer as well); this, when dry, will be as tight as a drum. Now take a small cord, or twine, 50 or more feet long; make a small hole in the center of each parchment head, pass one end of the cord through, and make a knot on the other side—or inside—to hold it; the engraving shows the thing, but not the whole length of the cord. To use this, two persons, each taking one of the tin drums, and *stretch the string a little tight*. One talks into the open end of the tin, while the other holds his to his ear. The voice sets the parchment to vibrating; these motions are carried along the string, and set the other parchment into the same kind of motion, and this allows the ear of the other to hear what was said quite plainly. This is but a toy, but it shows one way in which words may be carried to a distance.

Aunt Sue's Puzzle-Box.

TRANSPOSITIONS.

(*Fill the blanks in each sentence with the same word transposed.*)

1. If he doesn't take —— he will lose the ——.
2. The route runs on a — — with the — —.
3. He looked —— when he took the ——.
4. The —— had to go through several ——.
5. He took good care to —— his beautiful ——.

NIP.

DIAMOND PUZZLE.

1. Part of a cabbage. 2. An animal. 3. A kind of lily. 4. A certain kind of transportation. 5. A city in the United States. 5. Hibernating animals. 7. A surgical instrument. 8. A mineral. 9. Part of a bean.

DENVER, C. T.

RHOMBOID PUZZLE.

Across.

1. What the baby does when the mosquitoes trouble him at night. * * * *
2. What day-laborers always welcome. * * * *
3. What Noah did when he first put his foot on the ark. * * * * *
4. Exactly the same as number 3. * * * * *

Downwards.

1. Without this we never should get wet.
2. Often a bad position for a man's hat.
3. A despicable individual.
4. A certain kind of people or things.
5. A conjunction.
6. A verb.
7. The first and last of every deed.

BIBLICAL ENIGMA.

I am composed of 28 letters:

My 5, 24, 1, 13, 8, 12, was a city celebrated for its commerce and literature.
My 9, 4, 16, 1, 27, 23, a beautiful, fertile plain of Palestine.
My 14, 17, 2, 15, 26, 1, is the refined spirit or quintessence.
My 17, 11, 3, 2, 7, 10, a band of soldiers in the Roman army.
My 22, 18, 21, 6, 28, 9, is a European city.
My 25, 16, 17, 19, 10, 20, was an ancient measure of money.
My whole is part of a verse of Proverbs. ISOLA.

NUMERICAL ENIGMAS.

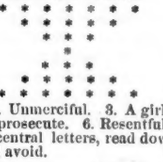
1. I am composed of 45 letters:
My 21, 35, 43, 1, 12, 26, 45, 31, is a celebrated philosopher.
My 41, 17, 37, 7, 9, 24, is the name of a prophet.
My 19, 28, 44, 5, 23, a city in France.
My 22, 14, 8, 40, 6, 4, 25, 42, is something we all have of which no one can rob us.
My 16, 13, 2, 33, 36, 20, is a bird.
My 32, 3, 38, 34, 45, 39, is a constellation.
My 15, 10, 27, 30, 6, 14, 9, is a country of old Europe.
My 25, 11, 34, 18, 29, 9, is a city of Greece.
My whole is all too true. FANNY BOND.

2. I am composed of 10 letters:
My 1, 2, 7, is a pronoun.
My 6, 10, 3, 9, is a fruit.
My 9, 8, 4, 10, is a tool.
My 5, 2, 7, 10, 6, is an animal.
My whole is a well-known author. KATE J. CURTISS.

3. I am composed of 10 letters:
My 4, 2, 9, 6, 10, is a fastening.
My 4, 2, 9, 10, 5, is a machine.
My 4, 2, 1, 10, is a stick of wood.
My 3, 8, 7, 9, is a bar for fastening.
My whole is an article of every day use. J. & C.

4. I am composed of 17 letters:
My 8, 6, 7, is a girl's nickname.
My 5, 2, 9, 9, 13, 14, is pliant.
My 1, 3, 4, is an insect.
My 11, 14, 1, 13, is ardor.
My 12, 16, 3, 14, is a girdle.
My 15, 7, 1, 10, 17, are much discussed by young ladies at boarding-school.
My whole is something to which we all look forward with interest and pleasure. SYDNORA.

HOUR-GLASS PUZZLE.



1. An enemy. 2. Unmerciful. 3. A girl's name. 4. A consonant. 5. To prosecute. 6. Resentful. 7. To search thoroughly. The central letters, read downwards, name what we should all avoid. TRY AGAIN.

ALPHABETICAL ARITHMETIC.

G A L) G R I T M L T H (L S A I G L
G A L
L R T M
L G I A
O L R L
O S A I
L S R T
L S O G
G A H
G A L
T

CHAS. A. SPROAT.

CROSS WORDS.

1. My first is in hawthorne but not in pine,
My next is in brandy but not in wine,
My third is in teach but not in learn,
My fourth is in scald but not in burn,
My fifth is in voice but not in tone,
My whole is what all men like to own. ROBT. F. Q.

2. My first is in pudding but not in pie,
My next is in nearly but not in nigh,
My third is in distance but not in length,
My fourth is in power but not in strength,
My fifth is in pond but not in lake,
My sixth is in mend but not in break,
My seventh is in lend but not in borrow,
My eighth is in hope but not in sorrow,
My ninth is in months but not in years,
My tenth is in cries but not in tears,
My eleventh is in yells but not in flight,
My whole the career of man will surely blight.
P. A. McI.

HIDDEN RIVERS.

1. He went to a donation party.
2. Combine useful with ornamental acquirements.
3. An Indian prisoner made his escape, deer-hunting.
4. Never indulge in wrath or anger.
5. Every unripe plum is sour, I think.
6. A young declaimer absurdly began gesticulating before speaking.
7. A painter said he could color a dog green if he so desired.
8. Give me some more lettuce and another cucumber, Landlord.
9. That young miss is sipping tea out of china a hundred years old.
10. A divorce lawyer said to a clergyman, "What you connect, I cut asunder." X. Y. Z.

SYNCOPATIONS.

(Subtract a letter. *Example:* Syncopate a heap, and leave something of which most boys are fond. Pile, pie.)

1. Syncopate a minute particle and leave something necessary to vegetation.
2. Syncopate a month and leave part of a circle.
3. Syncopate an agricultural implement and leave a plant.
4. Syncopate a country and leave part of the face.
5. Syncopate a tract of cultivated land and leave part of the body.
6. Syncopate a vehicle and leave a plant.
7. Syncopate part of a wagon and leave part of the foot. JOHN W. WHEATLY.

SQUARE WORD.

1. A Hindoo book. 2. A title of nobility. 3. A color. 4. Turkish coins. SPHINX.

DOUBLE CROSS-WORD.

My first is in hornet but not in fly,
My next is in near but not in nigh,
My third is in never but not in now,
My fourth is in manger but not in mow,
My fifth is in condor but not in kite,
My sixth is in nearly but not in quite,
And now two States will come to view
If you but place the letters true. E. W.

DOUBLE ACROSTIC.

The initials form a city in Pennsylvania and the finals a city in Massachusetts. 1. A small cannon. 2. A city in New York. 3. A farewell. 4. A city in Ohio. 5. A destroyer. 6. None. 7. A city in Prussia.

BILLY BUTTON.

ANSWERS TO PUZZLES IN THE MARCH NUMBER.

ARITHMOREMS.—1. Candle. 2. Mortal. 3. Island. 4. Simple. 5. Attend. 6. Point. 7. Extensive. 8. Cooks. 9. Civil. 10. Hoop.

ALPHABETICAL ARITHMETIC. *Key:* "Vanderbilt."

DROP-LETTER PUZZLE. Counterpoise.

CROSS WORD.—Saturday.

PI.—Pride is an extravagant opinion of your own worthiness: vanity is an inordinate desire that others should share that opinion.

DIAMOND PUZZLE. Fretfulness.

```
      F
     E R A
    G R E E N
   B A T T L E S
  B A S H F U L L Y
F R E T F U L N E S S
  B I L L I A N T
    S P A N I S H
      C L E F T
        A S P
          S
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Thanks for letters, puzzles, etc., to Charles B. W.

Send communications intended for Aunt Sue, to Box 111, *P. O., Brooklyn, N. Y.*, and *not* to 245 Broadway.

The Young Microscopist's Club.

I supposed that the contrivances for mounting the *American Agriculturist* Microscope, had all been given. I recollect that I said, in one of the former articles, that the chief thing was to get the lenses, and that when one had these, he could mount them in ways to suit his needs. Several methods of mounting the Microscope (my own and others) have been given, and now here comes one that shows so much ingenuity, and also knowledge of the Microscope, that I must give it in brief, allowing the engravings to show the details. This comes from Mr. E. W. Kilbourne, Agent of the American Express Co., Green Castle, Ind. He does not ask me to suppress his name, so I give it here, as an acknowledgement of his ingenuity. He writes a very full account, which I give in my own way, and makes very plain drawings, which are here engraved. Mr. K.'s object is to so mount the Microscope, that it can be readily used for both opaque and transparent objects, and also to allow it to be inclined to any desired angle, which is often

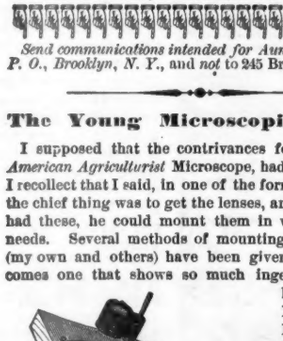

Fig. 1.—MICROSCOPE MOUNTED.

A Great Convenience.

The first thing required in Mr. K.'s mounting, is a heavy foot of hard-wood; this may be one inch thick, and six inches square. This is shown in *g*, *h*, figure 1. The Microscope is mounted upon a base, 3 x 4 inches, and of ¼ to ½-inch in thickness; this has an opening 1½ inch square cut in it, over which the Microscope sets; this base is seen more distinctly in figure 2, where it appears as if looked down upon. The Microscope is held in place over the opening by means of three large-headed carpet tacks. One of these is placed at the dot marked *l*, (fig. 2), and the other two at *k* and *p*; the tacks are not to be "driven home," but left so far above the surface of the wood, that the hard rubber base of the Microscope will pass between them with a slight push. The important point is to so attach this base, holding the Microscope to the heavy wooden foot, that it may be inclined at will; this Mr. K. ingeniously does by

Fig. 2.—BASE.

The Use of Curtain Fixtures.

At figure 3 is shown a common bronze casting, such as is used to hold up the end of the roller to a window shade or curtain. Two of these castings are attached to the heavy foot (*g*, *h*) by means of screws, and just far enough apart to allow a third to be placed between them. This third casting is fastened in a similar manner to the under-side of the base, shown in figure 2, and at *a*, *b*, figure 1; a small "stove-bolt," which may be had at any hardware store, is run through the eyes of all three of these castings. The diagram, figure 4, shows the position of the parts, as seen from the front: *c*, *d* is the foot; *a*, *b*, the base; *g*, *h*, *i*, the three curtain fixtures, through the eyes of which is passed the stove bolt, *o*, *p* (to be had at the stores for 2 to 4 cents). In case, as will usually happen, the bolt is too long, a common spool (*y*), or a part of one, may be used as a "washer," between the castings and the nut, *o*. This contrivance may be varied by using thick leather washers between the three castings, and between one of these and the head of the bolt, and between the other and the nut. The object of the arrangement is to allow the base, to which the Microscope is fastened, to be placed at and held at any angle. This accomplished, Mr. K.'s next point was to so

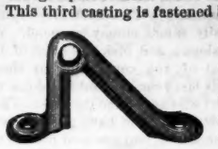
Fig. 3.—CASTING.

Fig. 4.—END VIEW.

Arrange a Mirror

that he could readily throw light upon any object under examination. This he does in a very simple manner. Beneath the base to which the Microscope is attached, as already described, is fastened a bottle-cork, by means of a strong wire running through it, bent at right angles below, and bent twice above, so that one end may be driven into the base to hold it in place. This arrangement is shown in figure 5. To hold the mirror, the strong wire *w*, is provided, which passes through the cork, and has soldered at one end a piece of thin tin plate (*a*, *b*) to hold the mirror, and at the other end a nickel cent, or any other contrivance to answer as a head by which the wire may be easily turned. The mirror—a piece of looking-glass—is held in place by turning down the corners of the piece of tin (*a*, *b*) to catch and hold it. It will be seen that by this arrangement the mirror can be rotated, and by revolving the cork upon its wire, it can have a right and left motion; by these two motions the light from the mirror can be greatly varied, as for

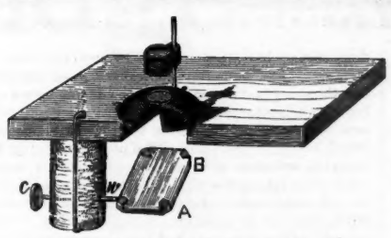

Fig. 5.—ARRANGEMENT OF MIRROR.

some objects an oblique light is better than a direct one. Mr. K. says that the whole outfit, soldering and all, cost him but 15 cents, and he finds this manner of mounting much preferable to that upon a cigar box, as before described. Those who can not readily get the curtain fixtures, can make a similar mounting of all wood, as shown in figure 6, where *a*, *b* is the base, *c*, *d* two wooden posts fastened to it; between these is another similar post, *f*, attached to the foot which holds the Microscope; this goes between the two lower posts, and through all three passes a bolt with a nut. The mirror and all other arrangements are to be as already described. I supposed we should not have any new mountings to describe, but this of Mr. Kilbourne is so ingenious, and so much easier to carry out than it looks, that I thought it would please many of you. Still I must not forget to speak of

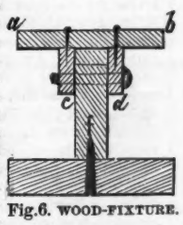

Fig. 6. WOOD-FIXTURE.

Objects to be Looked for,

and as in this I have kept well ahead of the season, most of you will be likely to find the objects mentioned last month, and in March and February, now, rather than earlier; but in these matters I have to recollect that there are youngsters who are enjoying spring, while others have not put away their sleds and skates. Objects will now be so abundant that you will hardly need to have them pointed out. This month, in the Northern States, will be a great time for fishing in the pools and ditches before they dry up, as most of them do before long. You have not, I hope, forgotten the Frog-spawn and the Snail's-eggs, described in March. If you take a glass jar, such as fruit is preserved in, and dip it full of water as suggested last month for finding the *Volvox*, or "Revolving Globe," you will be very likely to catch one or more kinds of what are called

"Water Fleas."

They are not Fleas though, but belong with the shrimps, crabs, and lobsters, in the class called by naturalists, *Crustaceans*. To get some specimens from which to make a drawing, I sent Master Ferdie to a pool I had noticed a short distance down the road, to get a jar full of the water. He came back, thinking that he had caught nothing, but upon holding the jar up to a strong light, I showed him that he had a regular menagerie of "Water-Fleas." These creatures are called "Water-Fleas" from the jerking manner of their movements, for they do not swim in a straight-ahead-way, but go by jumps. To draw one of these creatures, it had to be caught with the Dipping Tube, described last month, (fig. 9). Placed in the cell of the Microscope, with a few drops of water—enough to allow it to move about, it could be readily examined. This particular "Water-Flea," and you will no doubt find others, is called by naturalists *Daphnia*. A thin, transparent shield covers the animal, but it is open at the lower edge, and allows the parts of its body to protrude, as you can see when it jerks out its tail and other parts. If you catch a female, you will be very likely to find some eggs, which she carries between her shell and her body. The most common of our "Water-Fleas" is shown in figure 7. Among the curious things to be looked for now, are

Fig. 7.—WATER-FLEA.

The Vorticellas

which you may often find in pools, attached to chips and other matters. If you find on a stick, leaf, or other thing from one of these pools, a mere speck of cottony white stuff, you will possibly find the *Vorticella*. I have rarely failed to find it on the stems of flowers that have been kept in water for a long while, or you may make

Some Hay Tea,

and be very sure to get this, and other curious creatures, after a while. Make a wisp of hay, place it in a dish, and make an *infusion*, or tea, by pouring hot water over it; then let it stand for some days. The creatures thus found in infusions of vegetable matter, were called *infusoria*, a term which you will find in use for minute animals of various kinds. The *Vorticella*, or the one I have usually found on the hay, after it has been in steep for several days, is shown in figure 8, as it appears under the Microscope. It has a bell-shaped body on a long stalk. The mouth of the bell has a fringe of hairs; these being kept in constant motion, carrying water into the bell-like body, and with it creatures still smaller than itself, upon which it feeds.

Fig. 8.—VORTICELLA.

Each bell is attached to a stalk, which can on the instant coil itself in a spiral, and bring the bell-shaped part, which also shuts up, down to the point where it is attached. I know of no more curious creatures than these, and which, with a fair amount of patience, you can find either on decayed vegetable matter in pools, or can breed, as I have described, in an infusion of hay. It is a little late in most places for the flowers or "tags" of the Alders and Hazels, but where these, and

The Willows and Poplars

are not gone, you will find them worth examining. You will see that all, whether the "tags" upon Hazels, Alders, Poplars, and Willows, are each made up of a number of scales, underneath which you will find stamens only in the first two, but the tags may, in the willows and poplars, have either stamens or pistils, but only one kind in the tag from each tree. But most of you will like to look at flowers made more after the regular style than these. You will find very early, almost as soon as the snow goes off, the Chickweed, and its relatives, the Mouse-ear Chickweed. The flowers of these are very small, to be sure, and I mention them because, though small, they are quite as perfect in their way as any flowers. It is very likely that you may find some notes about the Microscope among the Basket Items. THE DOCTOR.

Little Gardeners and Little Gardens.

When we saw the picture given below of the "Little Gardeners," in an English magazine, "Our Little Folks," we thought it one that would please *our* little folks, for no doubt there are already many little gardeners among them, and we wish to have many more. Every one of our *American Agriculturist* family of youngsters should have a garden of some kind, and grow something. Those who live in the country, where land is not counted by feet and inches, but where there is so much room that there is no trouble as to the space, should be sure and have a garden of good size. Those who live in villages, where each house has a good sized yard and garden, can no doubt, if they ask for it, and agree to take care of it, have a small bed—a few square feet that they can call their "garden." But we must not forget that a great many of our readers live in cities; the parents of many of our youngsters, who are in crowded towns and cities, take the *American Agriculturist* because they expect to move into the country at some future time; others because they were brought up in the country, and love to read about it; others for its useful articles in addition to soil culture; and so in this way we have many readers among city children. What shall these do for a garden, whose back yard is hardly large enough to allow of the drying of the weekly washing? They must take to window-boxes, or even to pots, and whatever will hold earth. They can make a very good window-garden in a common wooden box, 6 or 8 inches broad and deep, and as long as the window-sill. A box of this kind, strongly nailed all around, and filled with earth to within an inch or so of the top, will allow of the growing of many interesting plants, and be a source of a great deal of pleasure. Of course, it would be better to have a regular garden with a plenty of room, in which to grow a great many things, but those who really love plants, will contrive to have them somehow, and will content themselves with even one, if no more are to be had. In the engraving we have a fine place in the country, with an abundance of room for the garden, and it is evidently a place where there is a gardener who has supplied the children with plants already partly grown in pots, which they have only to set out in the garden, where they will grow on and bloom. This is all very well for those who are so situated that they can have such things, and as on such places there is a gardener, the children who can make their garden in this way, will need no help from us, as the gardener will tell them what to do with the plants. But the great majority of our youngsters will *start* their garden, be it large or small—even a window-box, with seeds. Of course there are many desirable plants that are not raised from seed; the florists raise these from cuttings, and sell the small plants in little pots. Those who can afford it, can purchase these, but we will assume that in our "little garden" the plants are to be all raised from seeds. Did you ever think what a wonderful thing a seed is? No matter if a mere speck—like a Petunia seed, or as big as a bean—each seed is a perfect wonder. Though to all appearances, lifeless, dry, hard, and unpromising, expose it to the proper conditions, and a plant soon comes from it! We go to see wonderful tricks of magicians, who burn up a handkerchief, and afterwards return it all nicely ironed and perfumed, and wonder at it—but no trick ever played by the most skilled of these performers is half so wonderful as the production of a green, living, growing plant from a seemingly dead and dry seed. Yet this, which is almost a miracle, is so common, is constantly going on all about us, that we do not stop to think how very grand it all is. The farmer scatters what seems like dry and lifeless chaff, and there appear acres of green meadow—yet what happens in each little grass seed, is as wonderful in its way, as the motions of the planets. But before we talk of sowing the seed, and what happens after it is sown, let us consider what we shall sow. Here we are met with a difficulty—young people have not, generally, much money to spend. We could take a seed catalogue, and pick out a list of the best—but perhaps most of you could not buy them. Many of you saved seeds last year, no doubt, and can exchange these with others who have done the same. Then many of you must know those who have gardens, who will willingly give you seeds, for real lovers of flowers are always liberal in this way. Still many, to get a start, must buy. The beginner should start with *annuals*—*i. e.*, those plants which bloom the first year from the seed. Most seedsmen put up collections for 25c., 50c., or $1, of the best annuals, and probably seeds may be had more cheaply in collections than in any other way. If about to start a garden at the least expense, we should buy the seeds in "mixed" packets, and thus get a number of varieties for the price of one; each packet of mixed seed will give several varieties, from which seeds can be saved for next year—the different colors being kept separate, and thus a large supply be had for another year. The catalogues of the seedsmen offer the varieties of each plant—Asters, for example, a dozen or more distinct varieties in separate packets; and then, "finest mixed" at the same price of the separate packets. If the mixtures are fairly made, and we have no reason to suppose that they are not, a packet of mixed seeds should give from three to six different colors, from which the seeds may be saved separately. Taking the popular annuals, our selection would be, for those sold at 5c. the packet, Asters; Balsams (Touch-Me-Nots); Candytuft; Convolvulus (Morning Glories of the finer kinds, for we must have some climbers, you know); Mignonette (should be in every garden, for its fragrance); Sweet Peas (charming low climbers, and excellent to cut); Petunias; Drummond's Phlox (*Phlox Drummondii*, one of the most brilliant of all annuals, and in great variety); China Pinks; Portulaca; Stock Gillifiowers (called Stocks, the Ten-Weeks sorts are best); Double Zinnias (showy, large, and for the garden only). If some wish to expend more on a greater variety, they can easily do so, but we have in mind a small expenditure, and such plants as are likely to be satisfactory in a large or small garden, or even in a window-box, and we have tried to name such as will be showy in the garden, and for the most part, useful for cut-flowers. We know those who never cut flowers, but are great admirers of them as they grow in the garden, and others to whom a flower is of but little value if it can not be cut, and placed in a vase in the house, or made into a bouquet.

"THE LITTLE GARDENERS."—*Drawn and Engraved for the American Agriculturist.*

We have mentioned the wonderful things that happen, when the dry and apparently lifeless seeds are "exposed to the proper conditions." In starting our garden, we must know what those "conditions" are, as, having bought, or otherwise procured our seeds, we wish them to give us plants. We must have 1st, sufficient heat; 2d, sufficient moisture; and 3d, sufficient air. These are the principal points: 1st, "sufficient heat."—If you were to sow your Balsam, or your Portulaca seeds, as soon as the ground thaws, but while it was still cold, you would probably not find one to come up. The Sweet Pea, and some others, might stand this treatment, but as a rule, seeds should not be sown until the ground is well warmed. 2d, "sufficient moisture."—If you sow your seeds in perfectly dry soil, no change will take place in them; they will be at the end of one month, or six months, just as they were put in; place them in moist soil, but not wet, and they will soon swell, burst, and a little plant will appear, and this has a relation to 3d, "sufficient air."—We can not now give space to tell you *all* about seeds, or why they should need air; you must accept this and some other things as facts. Ordinary moist soil contains an abundance of air; wet soil does not, as the water fills up the pores of the soil, the seeds will have too much water, and no air; hence they can not grow. So your garden should not be too wet; in most of the States it is not likely to be too dry. A very good general rule, is to sow your seeds in the open ground at the time the farmers are planting their corn. Though our garden talk is already long, there are two or three things yet to be said. A great fault is sowing the seeds too deeply. Large seeds, like those of the Sweet Pea, and Morning Glories, may be put an inch deep, while the finer seeds, as those of the Petunia, etc., are so very small, that sown so deep as this, they would never be heard of. Such fine seeds need but the slightest possible covering with earth. All the seeds above named, may be sown where they are to stay, but all except Morning Glories, Mignonette, and Sweet Peas, may be as well transplanted as not. It may be that some of you do not know what transplanting means, so we will explain it. The seeds are sown, and the young plants allowed to get an inch or so high; then these little plants are taken up very carefully, a cloudy, damp day being the best, and planted out where they are to flower. You can, if you choose, sow the seeds of all the others, in a box, pan, or pot of earth, in a sunny window, and then transplant the young plants, when they get large enough to handle, to the garden, or you can sow them in a nice spot in your garden, and when large enough, set them where you wish them to bloom. We are always apt to sow seeds too thickly, and it is well to thin them, and set out the plants taken up in the thinning, in another place. If you must transplant when it is not moist and rainy, water the seed-bed well, and also the place where the little plants are to be set. Then after the plants are put out, and the weather is sunny, you must shade the little things, which may be done with shingles set so as to screen them, or by newspapers, kept from touching the plants by means of some sticks stuck near them. To keep the papers from being blown off, put some earth on their edges. Having thus far started your little garden, by telling you about sowing seeds, which may be those we have named, or any others that you can get, what we especially wish you to do is to watch the seeds as they come up, and how the little plants behave afterwards. In some cases you will see a pair of seed-leaves, as they are called, and the next leaves that appear will be quite unlike these—the "rough leaves," as the gardeners say. Your Sweet Peas will show no seed-leaves at all, while those of your Morning Glories will be large, broad, and green. If you love your little plants, you will watch all these things, and we will try to tell you more about them hereafter.

PLANTS FROM CUTTINGS, or "slips," as they are called, are often easily raised. If some friend gives you a "slip" of a Geranium, a Rose, or other plant, you have only to set it in a pot or box of very light sandy soil; pure sand is better than stiff clayey soil, and give it a plenty of light, but not much direct sun. Keep the earth moist, and usually in two or three weeks (and with some others much sooner) it will push out little roots, when it may be set out in better soil in the window-box or garden.

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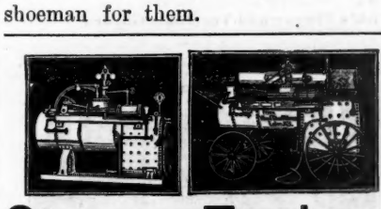

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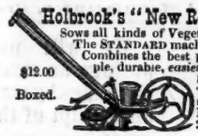

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Soluble
Pacific Guano.

The Superior excellence of this Guano has been so successfully demonstrated during the past ten years in the Middle and Southern States, on cotton, corn, tobacco, sugar-cane, and garden vegetables—the Company's sales having exceeded the enormous aggregate of 35,000 *tons in a single season*—that it is now offered for sale with entire confidence as to its merits. No fertilizer ever introduced in this country, has undergone severer tests, or come out of them with its character as a first-class, reliable fertilizer more thoroughly established. In consequence of the satisfactory results of these very complete tests, this Guano has acquired a reputation equal to that formerly enjoyed by Peruvian Guano. It is rich in **Bone Phosphate of Lime,** finely ground (a large proportion of which is immediately soluble), **Ammonia,** and **Potash,** besides other ingredients valuable as plant-food, manufactured at the Company's works, Woods Hole, Mass., and Charleston, S. C., under the supervision of competent chemists.

PACIFIC GUANO CO., BOSTON.

TROY, N. Y., April 9th, 1878.

NEW YORK PLOW CO., 55 Beekman St., New York.

"Your favor to hand. We don't want any of the Slip "Shares among the lot of Points ordered. We fail to see "where they benefit any one but the Manufacturer and "Farmer. You make more money out of them than out of "the ordinary point, and the Farmer can put his "Plow in order for about half the expense of buy-"ing a new point. We had rather sell a point "than a slip." Yours, &c. "

We print the above as a specimen of many frank and honest letters that we receive from Dealers. We appeal to the Farmers of the United States to assist us. Not only half the money is saved, but also half the labor, and when ground is dry, even more.

Prout's Hoeing Machine.

Worth double its cost to any farmer for hoeing Tobacco, Cabbage, Corn, or any other hoed crops. Has been in use in the Connecticut Valley for the past three years, and has more friends than any other implement for hoeing by horse-power. For further particulars, send for Ill'd Catalogue to

THE BELCHER & TAYLOR AG'L TOOL CO., Chicopee Falls, Mass.

Also Manufacturers of Bullard's Improved Hay Tedders, Feed Cutters, Plows, etc., etc.

CHAPMAN & VAN WYCK,
(Established 1849),
DEALERS IN
PERUVIAN Guano
EXCLUSIVELY,
170 Front Street, New York.

PERUVIAN GUANO.

Imported direct from Peru, by
HOBSON, HURTADO & CO.,
AGENTS OF THE GOVERNMENT OF PERU,
No. 63 Pine St., New York.

No. 1 Peruvian Guano—10 p. c. Ammonia Standard.
No. 1 Peruvian Guano—Lobos.

The "Lobos," containing 6 per cent Ammonia, 15@20 per cent Phosphoric Acid, and 3@5 per cent Potassa, is the best and cheapest **general Fertilizer** in the market, being admirably adapted for Cereals, Corn, Root Crops, Sugar Cane, and Cotton.

Circulars sent free on application.

THE BEST FERTILIZERS.
Per ton as follows:
GENUINE No. 1 PERUVIAN GUANO, $54.
Russel Coe's Super Phosphate of Lime, $40.
Double Refined Poudrette, $22.50.
Ammoniated Animal Matter (Bone, Meat, and Blood), unequaled for the price, $22.50.
Ground Bone, $27 & $30.
Best Land Plaster, $8 per ton, in barrels.
Send for TWENTY-THIRD annual pamphlet. Order direct of
H. B. GRIFFING,
Dealer in Agricultural Implements and Fertilizers.
60 Courtlandt Street, New York.

Bone Meal.

Fine ground. Warranted pure. Manufactured by
S. H. MORGAN. Toledo, Ohio.
Send for Circular.

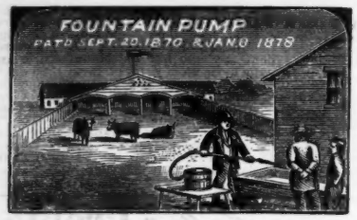
CHEAPEST FERTILIZER
BECAUSE THE BEST.
PREMIUM BONE

Grows **WHEAT and GRASS, equal to manure,** at **Half the Cost,** and lasts twice as long.

Farmers!! Send questions on Postal Card to EXCELSIOR FERTILIZER WORKS, Salem, Ohio. Circulars Free.

NEW JERSEY
Manure Baling Co.

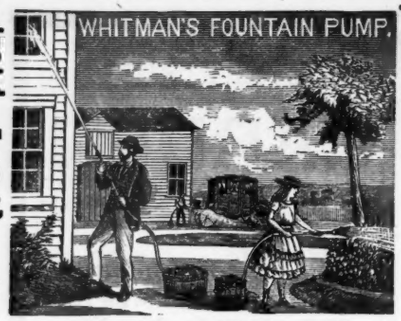
For Descriptive Circulars apply to
JOHN R. BURNETT,
Box 165, Newark, N. J.
Baling Yard, Corner of Oliver St. and New Jersey Rail Road Ave., Newark, N. J.



CLEANING PIPES, DRAINS, &c.

Having had occasion recently to open an obstructed drain, we procured one of Whitman's "FOUNTAIN PUMPS." We found it very effective; a stream of water being forced from a barrel brought for the purpose, into the drain, clearing it completely in a very short time. The advantage of being able to procure a very considerable pressure, if needed, or to force a continued and rapid stream of water into the drain, is very obvious. Either of these may be done with the "Fountain Pump" better than with any other simple contrivance known to us. If mud or sand has become consolidated in the drain, the stream of water may be thrown into it with sufficient strength to break up the mass and wash it away. It is well to take the precaution in using force to clean a drain or water-pipe, to drive the obstruction back in the way in which it entered the pipe. Water-pipes or waste-pipes in a dwelling, that have become obstructed, may be cleared very rapidly with this force-pump.—*Am. Agriculturist, July*, 1877.

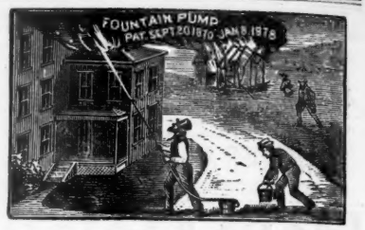
ASK FOR IT



WRITE FOR IT

"Adapted To Many Uses."

This pump, owing to its peculiar construction, is adapted to many uses for which an ordinary pump is unavailable. Its mechanism is simple. Vigorously handled the pump will throw a stream fifty feet, making it very useful in cases of sudden fire. Fire Insurance Companies indorse it on this account. It is portable in an unusual degree, as the operator may swing a pailful of water on his arm, and pointing the nozzle in any desired direction distribute water, mixtures, compounds, on trees, flowers, plants, insects, or anything that may require drenching. As an agent for the destruction of the Potato-Beetle and other noxious insects, it is invaluable. The distribution of Paris Green in a water solution is generally coming into favor, as the experience of many farmers, the past summer, was that the poison mixed with flour had a tendency to burn the leaves of the plant. The *Bee Keeper* reports that one of these pumps is a trustworthy agent for controlling bees while in the air, a plentiful spray from a "rose" nozzle causing the bees to come down without ceremony. It is also useful as a syringe for veterinary practice, and as for its household uses they are various, and will suggest themselves to all without prompting.



OXFORD, N. C., Dec. 11, 1878.

We have just had a fire in our town, and used the pump you sent us in June to great advantage. Indeed, we think it would have been a very disastrous fire had it not been for the pump. We think every family in a country village or town should have at least one.—H. C. & W. G. H.

The Ladies Like It,
The Men think It a Good Thing,
And the Children Cry for It.

LEXINGTON, Kentucky, May 31, 1877.

We took the pump along and created some little excitement. The ladies like it, the men think it a good thing, and the children cry for it.—J. W. C. & SONS.

No Dwelling, Country Home or Factory should be without the Fountain Pump. Send for Large Illustrated Circular. J. A. WHITMAN, Sole Proprietor and Manufacturer, Providence, R. I.

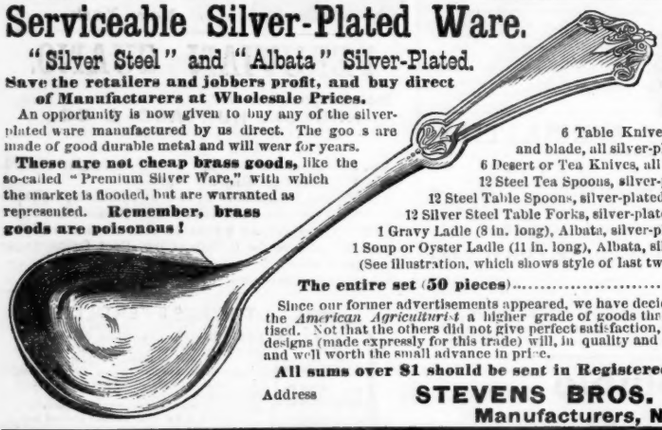
Serviceable Silver-Plated Ware.

"Silver Steel" and "Albata" Silver-Plated.

Save the retailers and jobbers profit, and buy direct of Manufacturers at Wholesale Prices.

An opportunity is now given to buy any of the silver-plated ware manufactured by us direct. The goo s are made of good durable metal and will wear for years.

These are not cheap brass goods, like the so-called "Premium Silver Ware," with which the market is flooded, but are warranted as represented. **Remember, brass goods are poisonous!**



We will pay postage on small packages by mail on receipt of the price.

6 Table Knives, solid steel handle and blade, all silver-plated.....$2.50
6 Desert or Tea Knives, all silver-plated.....$2.00
12 Steel Tea Spoons, silver-plated, ornamented..$1.50
12 Steel Table Spoons, silver-plated, ornamented.....$2.00
12 Silver Steel Table Forks, silver-plated, ornamented.....$2.00
1 Gravy Ladle (8 in. long), Albata, silver-plated..... .75
1 Soup or Oyster Ladle (11 in. long), Albata, silver-plated.....$1.25
(See illustration, which shows style of last two mentioned articles.)

The entire set (50 pieces).....$11.00

Since our former advertisements appeared, we have decided to give the readers of the *American Agriculturist* a higher grade of goods than those heretofore advertised. Not that the others did not give perfect satisfaction, but we feel that the new designs (made expressly for this trade) will, in quality and finish, be more desirable, and well worth the small advance in price.

All sums over $1 should be sent in Registered letter.

Address **STEVENS BROS. & CO., Manufacturers, Northford, Conn.**

CALCICAKE;

or, Compressed Calcimine.

Something New for Walls and Ceilings. Beautiful and Economical. Ready for Use, and can be Applied by Any One.

AVERILL PAINT,

READY FOR USE.

This Paint is indorsed as the best by thousands who have used it during the past twelve years. Beware of imitations. Send for Sample Cards, furnished free by the

AVERILL CHEMICAL PAINT CO.,

32 Burling Slip, N. Y.; 171 East Randolph St., Chicago; 132 East River St., Cleveland; N. E. Cor. Fourth and Race Sts., Philadelphia; 191 High St., Boston.

J. LLOYD HAIGH,
Manufacturer of

Steel and Iron Wire, and Wire Rope

Of Every Description.

Galvanized Wire Clothes-line, **Fence and Vineyard Wire**, and Fence Staples.
Price Lists with full particulars on application.

Offices No. 81 John St., New York City.
P. O. BOX 2,339.

RANDOLPH'S NEW DITCHER,

REVERSIBLE—Double Ender—doing work of sixty men by horse-power at cost of six! Steam Machines, costing less than $10 per day to run, doing from $100 to $140 work. Circulars from RANDOLPH BROS., 111 Broadway, New York.

Established 1887.

The "Phœnix Brand"

PURE WHITE LEAD

IS MANUFACTURED BY

THE OLD DUTCH PROCESS,

the only true method to make the best lead; and, as we make **perfectly pure lead** only, consumers can always rely on its quality.

ECKSTEIN, HILLS & CO., Cincinnati, O.
SOLD BY DEALERS GENERALLY.

RAZOR STEEL Pocket KNIVES.

We send by mail, postage paid, a one-blade boy's knife, razor steel, for 25c.; a heavy one-blade knife, 4-inch, 50c.; a two-blade knife 50c.; heavy 2-blade knife, 60c.; extra thick 2-blade knife, 75c.; ebony handle, 3-blade, $1; ivory handle, 3-blade, $1.25; ladies pen-knives 25 to 75 cents; Razor Steel Pruning knife, 75c. to $1. Our goods are *hand-forged* from best *razor steel*, and every blade warranted; we will exchange any found soft or flawy. We aim to build up a permanent trade. MAHER & GROSH, *Cutlers*, Toledo, O.

E. & O. WARD, PRODUCE COMMISSION MERCHANTS.

POULTRY, GAME, BUTTER, &c., &c.

Also Agents for Hornby's Steam-cooked Wheat and Oats.

No. 279 Washington-st., N. Y.

(Est'd 1845.) Ref., *Irving National Bank*, New York City.

W. S. BLUNT'S
UNIVERSAL FORCE PUMPS.

Secured by letters patent.

These pumps have enormous power, and are for the house or for **out-door wells** of any depth. They are constructed with special regard to strength, ease of working, and durability. They can be immediately changed from lift to force pumps, and the air chamber can be revolved, so as to allow the handle to work at any desired angle with the spout. Having close tops, they cannot be tampered with. Attention is called to our new elegant pattern **DEEP WELL non-freezing FIRE PUMP. Also, Blunt's Sand Vacuum Chambers.**—A complete protection against sand or gritty water in **dug or driven wells, pits, mines, and rivers.** For **hand or steam pumps,** all sizes, from 1¼-inch to 4-inch suction pipe.

Send for circulars to
NASON M'F'G CO., 71 Fulton and 71 Beekman St., New York.
Western Agency, **Newton & Hale, Chicago.**
Pacific Coast Agency, **Dunham, Carrigan & Co., San Francisco, Cal.**

A. B. GUNNISON,
MANUFACTURER OF

Cucumber Wood Pumps

For Wells and Cisterns.

Agents Wanted. Send for Circulars.

ERIE, PA.

More than 300 Different Styles

LIFT AND FORCE PUMPS,

HYDRAULIC RAMS, &c.

☞ Send for Circular and Prices. ☜

RUMSEY & CO.,
Seneca Falls, N. Y., U. S. A.

Portable Pump — Fire Extinguisher.

With **Graduating Sprinkler**—jet, spray, or finest mist at will; as Garden Engine and insect destroyer, the most efficient and cheapest ever sold. Send for illustrated circular **N. PAGE, Jr., Wakefield, Mass.**

THE DRIVEN WELL.

TOWN and COUNTY privileges for making **Driven Wells** and selling Licenses under the established **American Driven Well Patent,** leased by the year to responsible parties, by

WM. D. ANDREWS & BRO.,
NEW YORK.

Say where you saw this.

Champion Combination and Youth's Companion Foot Lathes, Amateur Steam Engines & Boilers, Cylinder Saws and Stave Machines. Send stamp for price. Strange's Cylinder Saw & Mach. Co. Taunton Mass

ALLEN'S PLANET, Jr. HAND SEED DRILLS AND WHEEL HOES are *standard* machines; thousands in use; have taken the *Centennial, Franklin Institute Silver, Erfurt, Germany,* and other medals. Sold either separate or combined: the combined tool (*Agriculturist Premium*), is greatly improved for 1878. **PRICES** *much reduced.* **THE PLANET Jr. HORSE HOE,** popular in 1877, is perfected for 1878. Wrought bolted frame, polished cast steel teeth, patent clevis, etc. Our catalogue IS **FREE.** S. L. ALLEN & CO., No. 229 Market Street, Philadelphia, Pa.

YALE VERTICAL MILLS, and Yale Vertical Engines.

The best built and best finished Machine in the Market. "The best is the cheapest."

The **Yale Vertical Mill** has an iron frame, and the very best of French Burr Stones, is self-oiling and self-feeding, *and for quantity and quality ground it has no superior.* Adjustable-balanced; long bearings, best arrangements, and in every respect it is the cheapest mill ever offered.

The **Yale Vertical Engine** is the best and most economical for either land or marine use, and is especially adapted to all farm purposes. We also manufacture Horizontal Engines, either with or without the *Rider* cut-off Rubber and Punching Presses. Send for illustrated circular. **YALE IRON WORKS, New Haven, Conn.**

Big Giant Corn Mill, Every Man His Own Miller.

The only Mill that will grind Corn with Shuck on without extra expense. The only Mill grinding Corn and Cob successfully that will grind Shelled Corn fine enough for family use.

Grinds twice as fast as any other Mill of same size and price.

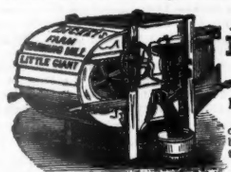
MANUFACTURED BY

J. A. FIELD, SON & CO., 922 N. 2nd St., St. Louis.

A. B. COHU, Gen. Agent, 197 Water St., New York.

The Best Fanning Mill in the World.

BUY THE **A. P. DICKEY Fanning Mill.**



No good Farmer can afford to market dirty grain.

A moderate quality of grain, well cleaned, brings a better price than the nicest grade in dirty condition.

Address **A. P. DICKEY, Racine, Wis.**

A. B. COHU, 197 Water St., N. Y., Agent for New York and Export Trade.

The "Thomas" Rake is made for farmers who want a first class Rake at a comparatively low price. It costs less for repairs, does better work, and is more durable than any other rake. It is the standard everywhere. We also make a lower priced rake, and the best Revolving Rake in the market. Send for circulars. Order from the factory if your dealer does not keep them. Made by J. H. THOMAS & SONS, Springfield, Ohio.

Beecher Baskets.

Star Basket.

PATENTED DECEMBER 17, 1872.

IMPROVED Square Basket. Patented Feb. 26, 1878.

VENEER BASKETS. Patented May 31, 1864.

For circular of description, &c., address THE BEECHER BASKET COMPANY, Westville, Conn.

THE MILFORD BASKET CO. are now prepared to furnish (at *Reduced Prices*) the square Verbena Basket, Quart, Pint, and ½ Quart Berry Basket, with or without crates. Send for price list.

MILFORD BASKET CO., Milford, Del.

C. COLBY & CO., Benton Harbor, Mich.

BERRY BOXES AND BASKETS.

Send for Illustrated Price List.

"THE AQUAPULT," a new and greatly improved Fire-Extinguisher, Garden Engine, Window and Carriage Washer, Tree, Vine, and Shrub Protector from Insects, etc., for starting Aqueducts, and various uses which readily suggest themselves. No Dwelling, Factory, Railroad Station or Wooden Railroad Bridge or Viaduct should be without one of these valuable articles. Weight, with hose, 5 lbs.; throws water 60 feet. Price, $9.00 each, sent by express, C.O.D. Manufactured by W. & B. DOUGLAS, Middletown, Ct., the oldest and most extensive manufacturers of Pumps in the world. Branch Warehouses, 65 and 67 John St., New York; 191 Lake St., Chicago, Ill.

THE "DOMESTIC" ENGINE.

2 and 4 Horse-Power.

PRINCIPAL FEATURES. Cold Bearings, Hardened Steel Pins, Casted Steel Connections, and **all parts interchangeable.**

WROUGHT-IRON BOILER.

Nothing Cheap but the Price.

F. F. & A. B. LANDIS, Manufacturers, **Lancaster, Pa.**

BOOKWALTER ENGINE.

Compact, Substantial, Economical, and Easily managed. Guaranteed to work well and give full power claimed. Engine and Boiler complete, including Governor, Pump, &c., (and boxing), at the low price of

3 Horse-Power.....$242.00
4½ " " 283.50
6½ " " 343.50

☞ Put on Cars at Springfield, Ohio.

JAMES LEFFEL & CO., Springfield, Ohio, or 109 Liberty St., New York City.

Established in 1840.

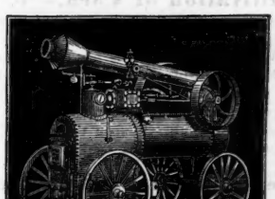
Eureka Safety Power.

h.p.	*cyl.*	*ht.*	*space.*	*wt.*	*price.*
2	3½x4	48 in	40x25	900	$ 150
4	4x6	56	46x30	1600	250
6	5x7	72	72x42	2700	400

Also **Spark Arresting Portables,** *and* **Stationary Engines** *for Plantations.* Send for Circulars.

B. W. PAYNE & SONS, Corning, N. Y.

Say where you saw this advertisement.



"Eclipse" FARM ENGINE

[See page 240, *Agriculturist,* 1877.] Send for Centennial Judges' Report and Catalogue of Engines, Boilers, Sawmills, &c. Address FRICK & CO., Waynesboro, Franklin Co., Pa

STEAM ENGINES

FARM ENGINES, both Horizontal and Vertical. **STATIONARY ENGINES AND SAW-MILLS,** We have the **largest** and **best** line of Engine patterns in U. S. Successors to Utica Steam Engine Co., formerly Wood & Mann, of Utica, N. Y. Address **TAYLOR MANUFACTURING CO., Westminster, Maryland.**

SNYDER'S "Little Giant" STEAM ENGINE.

For Farmers, Machinists, Printers, and all requiring Light Power.

Sizes from One to Six H. P. Prices for Engine and Boiler complete, from $150 to $450. We make the *Strongest Boiler* and the *Best Engine* in the country. Call at our Factory and examine, or send for free Illustrated and Descriptive Catalogue.

SNYDER BROS., 94 Fulton St., New York.

Black Bass for stocking ponds—**Pekin Ducks, Bronze & Narragansett Turkeys,** Light Brahmas. **Jersey Cattle,** A. J. C. C. R., and Cotswolds, at low prices. Address W. CLIFT, Mystic Bridge, Ct.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

Continued from p. 169.

The Grass Family.—An address delivered at the recent fair of the Cattaraugus Ag'l Society, by Prof. J. T. Edwards, and is quite out of the usual style of such addresses. The author has fallen into some singular errors—he says: "Prior to the landing of the Pilgrims, our English ancestors had no potatoes, corn, turnips, squashes, carrots, nor cabbages."—Cabbages were cultivated by the ancient Celts, and carrots and turnips by the ancient Greeks and Romans. He defines a grass thus: "It is a plant with a hollow stem," yet he enumerates Indian corn and sugar cane, the stems of which are not especially "hollow," among grasses.

Best Cows for Milk and Butter.—"W. W. M.,' Greenwood, Del. There is no question that the best cows for farm use, for milk and butter, are grade Jerseys. Cows of this kind that will make 300 pounds of the choicest butter in a year, can be procured from parties who make a business of breeding them, and they cost but one-third or one-half as much as prize Jerseys. See article with illustration of a grade Jersey cow on first page of the Nov. (1877) *American Agriculturist.*

Who is the Breeder.—"W. C.," Hatfield, Tenn. The breeder of an animal, according to the decision of the American Shorthorn Association last year, is the person who couples the sire and dam. This decision revokes all former ones to the contrary, and is clearly in the interest of the professional breeder, and not in that of the farmer; under this ruling a farmer who buys a cow in calf, and raises the progeny, has no credit as the breeder of the young animal. There are other reasons why this decision is objectionable.

The Performance of a Grade Jersey Cow.—"A. G. D.," Delaware Co., Pa., reports that his Grade Jersey cow, "Nelly," four years old, has made, the past summer, an average of 10 pounds of butter per week, the highest yield being 11 pounds 3 oz. On Nov. 29d last, the cream taken from 10 quarts of milk was churned, and gave 1 pound 15 ounces of butter.

To Destroy Lice.—"M. D.," Pike Co., Mo. Any greasy matter will destroy lice upon animals, if it can be brought into contact with them. Some more than usually penetrating and easily spreading oil, such as kerosene, diluted with lard, or sweet oil, is the most effective. A mixture of one part of carbolic acid in 50 parts of sweet oil, or lard, is also effective. As nothing of this kind kills the eggs, the application must be repeated frequently to destroy the newly hatched lice.

Number of Acres under Tobacco.—"A. G. P.," Colesburg, Pa. In 1870 there were over 262,000,000 lbs. of tobacco grown in the United States. Estimating the average product at about 800 lbs. per acre, we may conclude that over 300,000 acres were under this crop. It is not fair to consider that land is "desecrated" as you believe by this use, or that the produce is worse than wasted. The crop and its after manipulation serves as a means for putting much money into circulation, and finding employment for many thousands of people. That we *could* get along without tobacco is an argument that would apply to every article of luxury, including tea, coffee, silk, gold, silver, etc., etc.

Dip for Scabby Sheep.—"H. A.," Smith Co., Kansas, recommends a dip made of 7 pounds each of lime, and flowers of sulphur, boiled in 60 gallons of water, as a cure for scab in sheep.

Treatment for Scratches in a Horse.—"G. H. H.," Geneva, N. Y. "Scratches" is in reality a disease of the blood, and if the discharge at the heels is stopped without removing the disease itself, the effusion gathers in other parts of the body, and may result in "stocking" of the legs, or dropsical swellings, elsewhere. It would be well to use some laxative physic at first with the best and most nutritious food—for instance, a pint of raw linseed-oil two or three times, with one day intervening between the doses, and follow this with half an ounce of hyposulphite of soda, given daily for some weeks in the feed. Wash the legs with warm water and soap, then dress with a solution of 10 grains of carbolic acid in one tablespoonful of water, and finally brush it over with a large feather, dipped in glycerine.

will make a cord of wood, if it is growing in close timbers, and the limbs are not heavy. If the limbs are large and spreading, such a tree will make 1¼ to 1½ cords. A tree one foot in diameter will make only a fourth as much as one twice the diameter. In estimating, it is necessary to remember this fact.

Green Manuring.—"C. E. S.," Lewiston, Me. Plowing in green crops is a good way to begin in renovating a run down farm, but more than that is needed. It is difficult at first to get a heavy crop to plow under, and a light crop does little good. It is best to use some artificial fertilizer, such as Peruvian guano, or the prepared chemical manures, to help the first crop. When land will produce a fair burden of clover, and that is plowed in, a very good beginning is made; but that must be followed by a regular course of manuring and cropping, else the benefit will soon be lost again.

Rotting of Sod.—"R. P. H.," Towah, Wis. Sod from a natural meadow decomposes very slowly, nor do we know of any rapid method of hastening the process, except the addition of plenty of lime. If the partly rotted sods are intended for the fertilizing of light land, we would suggest that they be spread upon the surface now and plowed in as early as possible. They will rot more quickly in that way than any other.

Artificial Fertilizing.—"G. W.," Northampton Co., Pa. We do not doubt that a farm may be very easily carried on with but little live stock and grain sold yearly to pay expenses, by a system of chemical fertilizing, with an occasional green crop plowed in. But the most profitable branch of agriculture is raising live stock, either for meat or dairy purposes, growing grain to feed them, adding some purchased foods, and using some artificial fertilizers to help out what is made on the farm; while the poorest business is growing grain for sale only. Different fertilizers are compounded by the dealers to suit the needs of various crops.

Questions for Discussion.—The Volina (Mich.) Farmers' Club have the following programme of subjects for discussion for the present year, viz.: Breeding and management of hogs; clover and its management; farm stock, kinds, proportions, and management; (a volume might be written on this subject); corn, its varieties and cultivation; sheep shearing, show of stock and implements in May; wheat, varieties and cultivation; Town Fair in October; experience meeting in November; and in December an address by the President.

The Oxford-Down Ram "Freeland."—T. S. Cooper, "Linden Grove," Coopersburg, Pa., writes in regard to the noted Oxford-Down Ram "Freeland" as follows: "In your issue of last November appeared a portrait and sketch of the celebrated Oxford-Down Ram 'Freeland.' Will you kindly allow me to state that 'Freeland' was bred by and belonged to Mr. A. J. Milton Druce, Eynsham, England, who, in 1875, hired him for the season to Mr. John Treadwell for 50 guineas. In 1876 I hired him at public auction from Mr. Druce for 85 guineas, and in 1877 purchased him outright for a long price from that gentleman. He is now at Linden Grove, where I intend he shall end his days. I have forwarded you my Catalogue by this mail, from which you will be able to gather some interesting particulars concerning the breed generally, as well as a history of 'Freeland,' and the number of prizes won by him in England. He has done excellent service in my flock of imported ewes this fall, a number of which I have retained for my own breeding, so convinced am I of the superiority of the breed for general purposes in America. With my Oxford-Downs I won the flock prize of $100 at St. Louis last fall, a pretty good tribute to the excellence of the breed, and my correspondence has of late been largely increased, owing to the numerous inquiries received respecting them, which also shows their growing popularity. In booking orders for spring lambs I shall soon have reached the length of my tether."

Can Potatoes be Raised Perpetually on the Same Soil?—"F.," Aroostook Co., Me. There is no reason why potatoes should not be grown year after year upon the same soil, if proper fertilizers are supplied. But there is no necessity to do this. Potatoes may be grown once every four years, by making a rotation of grass and clover, potatoes on the sod, and wheat, rye, or other small grain or perhaps a crop of peas, or oats, intervening. On 100 acres there may then be 20 to 25 acres of potatoes yielding $1,000 each year, which is a handsome money income. Potatoes take from the soil chiefly potash and lime, and if the waste and vines are returned, there is little exhaustion.

The Cultivation of Cranberries.—We hear occasionally of large profits from cranberry culture, but rarely of the losses. That many undertakings in cranberry growing have been altogether the reverse of profitable, is as true as that many have paid handsome returns. There is no culture which requires such peculiar conditions, and unless these are naturally present, or artificially provided, failure is very sure to follow. Because cranberries often grow wild in abundance, many think they need but little care, while the fact is, their natural localities are of a kind very difficult to imitate. No one should invest money in an attempt to grow this fruit, without first thoroughly understanding its requirements, and making sure that he can meet them. The essentials are: a soil of peat or muck; an abundant supply of sharp sand, without admixture of clay, and water under control. The water system must be so arranged, and the supply sufficient, to allow the meadow to be completely flooded at will, and on the other hand the drainage must be such, that no stagnant water will remain around the roots of the plant, but there must be free drainage to 12 or 18 inches below the surface. Every one of these conditions is essential, and relates to the locality. This will serve as a general answer to the inquiries that come each spring, concerning cranberries. These points, with all other matters in regard to establishing and managing a cranberry meadow, are given in full detail in "Cranberry Culture," by J. J. White, a practical New Jersey grower, which is a remarkably complete work on a special culture, and should be thoroughly studied by every one who proposes to undertake cranberry growing. Like other practical and impartial works, a part of its usefulness consists in showing the folly of attempting the culture unless all the conditions may be met. Sent post-paid by Orange Judd Company, for $1.25

Glasnevin.—A friend kindly calls our attention to the fact that last month we inadvertently, not ignorantly, wrote Scotland, instead of Ireland, in speaking of a well known Botanic Garden near Dublin.

Effect of Ashes—Salt.—"E. D. S.," Orleans Co., N. Y. 20 bushels of ashes per acre drilled in with grain, would almost certainly destroy the seed, or at least the tender sprout when it germinates. Ashes are always best scattered upon the surface. As ashes are not so quickly soluble as most commercial fertilizers, a larger quantity needs to be used, and as they dissolve slowly, the effect is more permanent. Salt is used as a fertilizer at the rate of 1 to 5 bushels per acre.

Sheep Shears.—"G. B. S.," Cooper Co., Mo. After having tried several so-called improved sheep shears, we prefer the common kind. Those with teeth, or guards, to protect the sheep, give no protection in unskilled hands, and they gum up so much that the work is very tiresome to the wrist and arm. If there is a better shears than the common one, we want to find it.

Flat Cultivation of Corn.—"G. W. W.," Memphis, Tenn. The flat cultivation of corn is generally considered preferable to hilling or plowing up to the rows. We have practised the method for some years, and prefer it to plowing up ridges or hills. Planting in drills is not only more convenient, but there can be more corn grown upon the same ground than when in hills or squares, and the cultivation on the flat will be found cheaper, and, if properly done, equally cleanly.

Trouble With Field Mice.—A note from Coles Co., Ill., states that the district is over-run with field mice, to the great loss of the crops. How many boys are there in Coles Co. of the age of 12—indeed how many men "big enough, old enough, and ought to know better," who will not go out of their way to kill everything in the shape of a snake—for no other reason than it is a *snake*, and consequently no business to live? The harmless reptile is, in reality, fulfilling the object of its existence quite as well—to say the least, as the boy or man who kills it. How many boys (or males big enough to be men), who own, or can borrow a gun, will not shoot at, or indeed, spend half a day in hunting every little owl, or Sparrow-hawk, or Mouse-hawk? the last of these lives almost solely on field mice, which also form the principal food of most of the smaller birds of prey. If we will persist in killing, or in allowing to be killed, the insect-eating birds, we must expect insects to increase. If we will destroy or drive away the birds and snakes provided to keep field mice in check, we must kill the mice ourselves, or suffer the loss of our crops.

Catalogues Received.

Generally the list of Nurserymen's, Florists, and Seedsmen's catalogues ceases with April, and is not resumed until the announcements for the fall trade come to hand, but here are several that have been belated or omitted from one cause and another. Very full lists will be found in our issues for March and April.

NURSERYMEN.

A. HANCE & SON, Red Bank, N. J., send special list of a surplus stock, and one describing the Honeywell Peach.

YOAKUM & Co., Larissa, Cherokee Co., Texas. It will do our Texas friends little good to notice this catalogue now, but we would call attention to an excellent feature in it. For each kind of fruit they give a "Superlative List" of varieties thoroughly tested and commended for Texas, and besides a "General List."

SEEDSMEN.

B. K. BLISS & SONS, No. 34 Barclay St., N. Y.—An extra catalogue, which should have reached us last month. It contains important novelties in field seeds (including potatoes), vegetable and flower seeds; abundantly and handsomely illustrated.

CROSMAN BROTHERS, Rochester, N. Y.—The catalogue of this long-established house is as full and as neat as usual, and we fear that it is our own fault that it was not noticed last month.

C. H. HOVEY & Co., 22 Tremont St., Boston, Mass., besides the catalogue of plants, noted in March, send another of seeds and plants, compact and comprehensive.

E. L. MEYER, "Druggist and Seedsman," Hutchinson, Kas., a full, useful catalogue of garden and farm seeds.

FLORISTS.

GREENBROOK AND PATERSON NURSERIES, J. Grieves, Sec., Paterson, N. J.—Very full in the way of description and cultural directions, mostly for greenhouse stock.

LONG BROTHERS, Buffalo, N. Y., send their list of Dollar Collections, of which there are 30, and very cheap they are. Besides this, they send their general catalogue of plants, very neat and compact, with a list of seeds.

J. WARREN MERRILL, Cambridge, Mass., makes a specialty of native and exotic Ferns; his list is very full; those desiring to exchange or purchase, may address his gardener, A. B. Gilbert, Cambridgeport, Mass.

AGRICULTURAL AND HORTICULTURAL MACHINERY AND APPLIANCES.

ADRIANCE PLATT & Co., No. 165 Greenwich St., N. Y., send two publications relating to the "Buckeye" Mower and Reaper. The same perfection attends these publications that characterises the machines they describe. One illustrates the mowers and reapers at work and on the road, and each picture is a work of art. The horses are at work, the men are driving, and there are no "lay figures." The other gives every extra part to each machine, from the driving-wheel down to the smallest screw, showing a wonderful attention to details, and making a work valuable to every owner of a "Buckeye."

THE BEECHER BASKET Co., Westville, Conn.—An illustrated catalogue of their well known baskets and crates.

THE BELCHER TAYLOR A'G'L TOOL Co., Chicopee Falls, Mass.—Full illustrated catalogues of the "Bullard Hay Tedder," and "Prout's Hoeing Machine," both of excellent reputation.

BOOMER & BOSCHERT, Syracuse, N. Y.—We described their remarkable cider and wine Press, as seen at the Centennial, in the *American Agriculturist* for July, 1877. This fully illustrated catalogue gives every detail.

WM. L. BOYER & Co., Philadelphia, Pa., Farm grist mills for grinding all sorts of grain; fodder-cutters and a clover-seed gatherer which harvests one acre per hour.

GARDNER B. WEEKS, Syracuse N. Y., Dairy Apparatus and supplies, including steam-boilers and engines.

H. B. GRIFFING, 60 Cortlandt St., N. Y., all sorts of machinery, fertilizers, and tools for the farm; including the popular Kirby mower and reaper, with hay and straw-presses, and the new manure-baling press. Also city stable manure put up in small bales of 300 lbs. each.

HUBBELL & CHEESEBORO, Geddes, N. Y.—A stoneware package, glazed inside and out, for butter.

JOHN L. KIPP, No. 163 Eldridge St., N. Y.—A catalogue of the wares made at the "Kipp Wagon Works," including carts and trucks, hand-carts and wheel-barrows in an astonishing variety, each style illustrated.

NEW YORK PLOW Co., Beekman St., N. Y,. make the Nishwitz Harrow, the Adamant Plow, and various other improved farm machines.

N. PAGE, JR., Wakefield, Mass., continues to make his Pump and Sprinkler, illustrating it in two catalogues.

B. W. PAYNE & SONS, Corning, Steuben Co., N. Y.—An illustrated catalogue of the various forms of portable and stationary steam-engines made by them.

RUMSEY & Co., Seneca Falls, N. Y.—This catalogue, of 160 large pages, might well be called an illustrated treatise on Hydraulics. Almost everything contrived for raising water, from the simplest Pitcher Pump, through all sorts of force, hand and steam pumps and Water Rams, up to the large Fire Engine, including every possible accessory, from a screw, up to the trumpet of the Captain of the "mashcen," is here given in full.

THE YALE VERTICAL GRIST MILL, made by the Yale Iron Works, New Haven, Ct., also engines for small boats and yachts, lathes and other machinery.

J. R. WHITTEMORE, Chicopee Falls, makes, and Whittemore Brothers, Boston, also sell, the Victor Feed Cutter and the Champion Horse Rake, of which they send illustrated descriptions.

J. C. WOOD & BROTHER, Fishkill, N. Y., send an illustrated catalogue of berry baskets, crates, and other fruit packages, including the small peach basket which we introduced to Eastern fruit dealers a few years ago.

LIVE STOCK.

HERBERT MERRIAM, Cherry Brook Farm, Weston, Mass., Ayrshire cattle; Yorkshire and Berkshire pigs.

BELLEVIEW STOCK FARM, Dundee, N. Y. Celebrated Stallions for the season of 1878. Details are furnished by N. Powlison, Supt. of the farm.

EDWARD LUTZ, 80 5th Avenue, Pittsburg, Pa., Brown Leghorn fowls.

J. H. MORRISON, Marlow, Cheshire Co., N. H., Plymouth Rock fowls.

MISCELLANEOUS.

AGRICULTURAL INSURANCE Co., Watertown, N. Y.—Insures only farm property and private residences. They

describe their business, and give figures in a neat circular.

J. S. BIRCH & CO., 88 Dey St., N. Y., illustrate in a neat pamphlet a wonderful variety of their self-adjusting watch keys, and other specialties.

W. H. CUMMINGS, Millidale, Conn., sends catalogue of his Plymouth Rock fowls.

J. A. PARK & CO., Lansing, Mich.—Illustrate and describe their "Harvard and Yale" Chair Desks.

L. C. ROOT, Mohawk, N. Y.—Bees; things to keep them, and to smoke them out, Honey Extractors, and all such "apiarian notions."

L. H. RUSSELL, Stratford, Conn.—Scroll saws, materials and patterns in endless variety.

GEO. W. SIMMONS, Newark, Del.—Hives of various kinds and apiarian supplies in general.

ERNEST STEIGER, 22 and 24 Frankfort St.—German books of all kinds, kindergarten literature, scientific periodicals, and various special catalogues.

OSCAR W. YOUNG, 60 4th St., Brooklyn, N. Y.—A priced and numbered catalogue of the beautiful scrap-book figures, to which we referred some months ago.

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IV. Phænogamic Botany, by Prof. Geo. L. Goodale, Fee, $25.

V. Geology, - - - - - - by Prof. N. S. Shaler, Fee, $50.

Each Course will last six weeks. The first four courses will be given at Cambridge, and the fifth at a camp near Cumberland Gap, Kentucky. The fees are payable in advance, by mail or in person, to Allen Danforth, Bursar, Cambridge, Mass.

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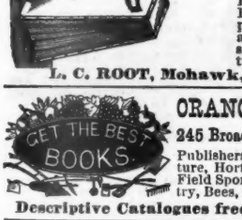

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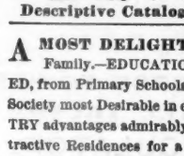

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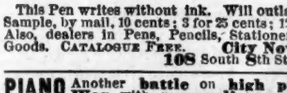

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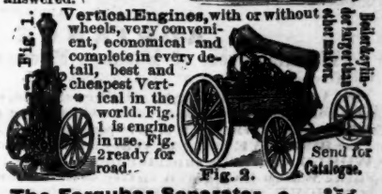

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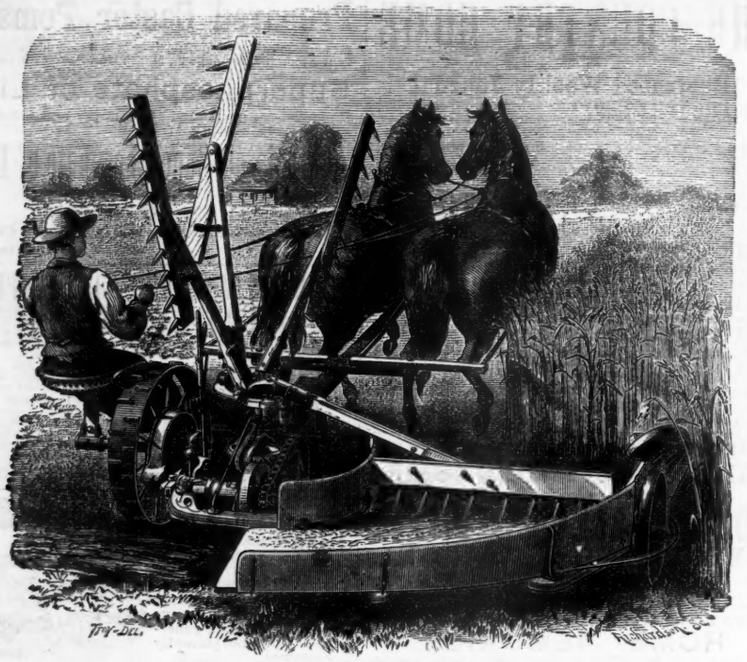

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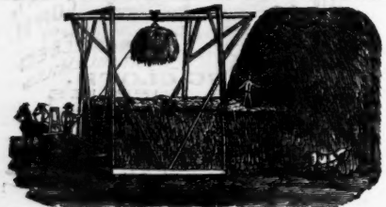
RAILWAY PITCHING APPARATUS.

Chapman's. Best Fork and Conveyor in use. Unloads and carries Hay, Grains, &c., over deep mows, into sheds, barns, &c. Saves labor, time, money. Sent on trial. Circulars sent. Agents wanted.

G. B. Weeks **Syracuse, N. Y.**



Use the Anti-Friction Hay-Carrier,

For elevating and conveying Hay, Grain, etc., in barn, barrack, shed, or field. It elevates perpendicularly and conveys horizontally any desired distance. No trouble about getting over high beams and to the end of deep mows, or to the top of high stacks. **Thousands are now in use.** Five tons have been stacked and the frame moved in 45 consecutive minutes. Fifty tons have been stacked in a single day with this Frame and Carrier. Send for Circular "2" to

U. S. WIND ENGINE & PUMP CO., Batavia, Ill.

FOUST'S

HAY LOADER.

A perfect machine for rapidly pitching hay, barley, and all loose grain on the wagon in the field. Saves as much time and money as the mower and horse rake. Thousands in use by the best farmers in the country. Price reduced. Send for Circulars to the manufacturers,

STRATTON & CULLUM, Meadville, Pa.

GARDNER'S RAILWAY PITCHING APPARATUS.

Consisting of Carrier, Grappling Fork, Pulleys, and Hooks. For unloading Hay, Grain, Beans, Corn Stalks, loose or in bundles, etc. Can be used in any barn. Also, Improved Stacking Apparatus. Send for Circular, and get valuable information.

E. V. R. GARDNER & CO.,
Johnson's, Orange Co., N. Y.

The Chamberlin Screw Stump Machine,

after 10 years test, has proved its superiority over all others, by its great exhibition of strength and durability, combined with cheapness and ease in pulling all classes of stumps. The Company's challenge of $1000 for a stump machine which would excel theirs, has stood since 1867 without being taken. They build 6 different sizes of machines, to pull all kinds of stumps. They make Subsoilers and Ditching Plows. For Particulars, Prices, etc., address

THE CHAMBERLIN M'F'G CO.,
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MONEY *Made rapidly* with Stencil and Key Check Outfits. Catalogues and Samples FREE. S. M. SPENCER, 112 Washington St., Boston, Mass.

THE JOHNSTON HARVESTER CO.,

Manufacturers of

Self Raking Reapers, Combined Machines, and Mowers,

Send for Catalogue. **Brockport, N. Y.**

SPRING STEEL TOOTH Horse Rakes.

Highest Award. Medal of Honor at the Centennial and Vienna Exhibitions. THE CHAMPIONS OF THE WORLD. No Cogs or Ratchets, Easiest Hand or Horse Dumping. Purchasers prefer them to all others for Durability and Efficiency. Fully guaranteed; so no risk is incurred in ordering from us. Responsible Agents wanted, where we have none. Send Stamp for Catalogues of Rakes, Threshing Machines, &c.

WHEELER & MELICK CO.,
ALBANY, N. Y.

Patent Tooth Horse Rake,

which does not scratch the ground and dust the hay. **Best Rake** made. Buy no other rake and have clean hay.

New **VICTOR LEVER FEED CUTTER,** *Largest and Best made.*

Send for circular to

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Chicopee Falls, Mass.

DOUBLE HARPOON HORSE HAY-FORK.

BEST IN THE WORLD.

Descriptive Catalogue sent free.

Pennock Manufacturing Company,
KENNETT SQUARE, Chester Co., Pa.

Fitzhugh's Am. Hay-Elevator.

The greatest labor-saving machine in use. Easily put up and operated. It will take one ton of hay from the wagon and carry it back 100 feet in mow in 5½ minutes. Only occupies 14 in. of space in peak of barn. It is very durable and cheap. Price $12.00. Send for descriptive catalogue. J. R. FITZHUGH, Mfr. and Pat., 1,708 Barker St., Philadelphia, Penn. Branch Office 35 Beekman St., N. Y.

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MANUFACTURERS OF

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Power Corn Shellers and Cleaners.

AURORA, INDIANA.

The Peerless Thresher and Cleaner—Clover Huller and Cleaner—Straw-Preserving Rye Threshers—Railway and Lever Powers—The Howland Feed Mill—Grain Fans and Corn Shellers. Our machines are guaranteed to work well, and have received the highest testimonials and cannot be excelled.

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HEEBNER'S HORSE POWER WITH PATENT LEVEL TREAD AND SPEED REGULATOR.

Heebner's Improved Threshing Machines. Send for Illustrated Circulars to

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RUFUS L. COLE PRODUCE COMMISSION MERCHANT,

141 Reade St., New York. *Established in* 1852. Market reports and shipping directions sent *free* on application.

NEW EXCELSIOR LAWN MOWER.

Received Highest Award at the Centennial Exposition!

IMPORTANT FEATURES FOR THE SEASON OF 1878.

REDUCTION in PRICE!

LESS WEIGHT! LIGHTER DRAFT!

And Furnished with either Wheels or Roller.

It has been adopted and can be seen in practical operation on the **Public Parks** of **New York, Brooklyn, Boston, New Haven, Cleveland, Chicago,** and on almost all the prominent City Parks in the UNITED STATES and CANADA.

The **EXCELSIOR** received the **FIRST PREMIUMS** at the **Great Lawn Mower Trials** held in New York City, Cleveland, O., Waverly, N. J.; also at the **Great International Lawn Mower Trial** held at CARLISLE, ENGLAND, in Sept. last, and at many other trials and Agricultural Fairs held in Europe and America.

6 SIZES FOR HAND POWER—4 SIZES FOR HORSE POWER

Our New Horse Mower is conceded to be the LIGHTEST and BEST Horse Lawn Mower ever made.

N. B.—*Horse* and *Hand* Lawn Mowers are alike guaranteed in every respect.

Address **CHADBORN & COLDWELL M'F'G CO.,**

Send for Circulars. **Newburgh, N. Y.**

CITY AND COUNTRY TRADE

SUPPLIED WITH THE

Celebrated Excelsior Lawn Mower.

H. B. GRIFFING,

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1878.

SEVEN SIZES FOR HAND USE.

Weighing from 32 to 51 lbs.

THREE SIZES FOR HORSE POWER.

These Machines did an amount of work on the Centennial Grounds, equal to 10 years' of ordinary use—without loss of time for sharpening or repairs—and completely distancing all competitors in that celebrated trial of 6 months duration.

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LAWN MOWERS.

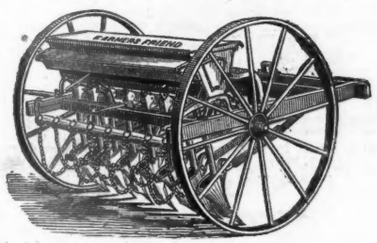
Most Approved Kinds, at Lowest Prices.

A. B. COHU,

Manufacturer of Improved Agricultural Implements,

One door from Fulton St. **197 Water St., N. Y.**

Farmers Friend Grain



And Fertilizer Drill.

The quantity is regulated with gear-wheels **in a CONE,** so there are no **loose wheels** or **movable feeders,** and it will sow any grain perfectly and accurately.

It has the best **Spring Hoe,** and every Drill has a **Force-Feed Grass-Seeder, Patent Shifter,** and **Surveyor** free.

Illustrated Catalogues, with description, prices, and a **Full Centennial Report,** sent on application. Agents wanted in unoccupied territory. Address, stating where you saw this notice,

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FARMS in the best part of **MARYLAND** at *great bargains.* For catalogue and prices address Mancha & Gibson, Centreville, Md.

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'VIBRATOR'

Reg. March 31, 1874.

THE ORIGINAL & ONLY GENUINE "Vibrator" Threshers,

WITH IMPROVED

MOUNTED HORSE POWERS,

And Steam Thresher Engines,

Made only by

NICHOLS, SHEPARD & CO.,

BATTLE CREEK, MICH.

THE Matchless Grain-Saving, Time-Saving, and Money-Saving Threshers of this day and generation. Beyond all Rivalry for Rapid Work, Perfect Cleaning, and for Saving Grain from Wastage.

GRAIN Raisers will not Submit to the enormous wastage of Grain & the inferior work done by the other machines, when once posted on the difference.

THE ENTIRE Threshing Expenses (and often 3 to 5 Times that amount) can be made by the Extra Grain SAVED by these Improved Machines.

NO Revolving Shafts Inside the Sepa-rator. Entirely free from Beaters, Pickers, Raddles, and all such time-wasting and grain-wasting complications. Perfectly adapted to all Kinds and Conditions of Grain, Wet or Dry, Long or Short, Headed or Bound.

NOT only Vastly Superior for Wheat, Oats, Barley, Rye, and like Grains, but the ONLY Successful Thresher in Flax, Timothy, Millet, Clover, and like Seeds. Requires no "attachments" or "rebuilding" to change from Grain to Seeds.

MARVELOUS for Simplicity of Parts, using less than one-half the usual Belts and Gears. Makes no Litterings or Scatterings.

FOUR Sizes of Separators Made, ranging from Six to Twelve Horse size, and two styles of Mounted Horse Powers to match.

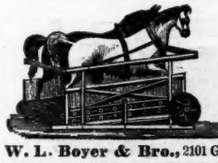
STEAM Power Threshers a Specialty. A special size Separator made expressly for Steam Power.

OUR Unrivaled Steam Thresher En-gines, with Valuable Improvements and Distinctive Features, far beyond any other make or kind.

IN Thorough Workmanship, Elegant Finish, Perfection of Parts, Completeness of Equipment, etc., our "VIBRATOR" Thresher Outfits are Incomparable.

FOR Particulars, call on our Dealers or write to us for Illustrated Circular, which we mail free.

THE UNION RAILWAY



HORSE POWER

& Premium Thresher.

This power produces **much more power** than other railway powers, with **much less elevation.**

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La Dows Jointed Pulverizing & Smoothing DISC HARROW.

Light, Simple,

Durable & Flexible.

Being jointed in the center, is adapted to both smooth and uneven surfaces. Acknowledged the best of the kind, and will pulverize and cover seed better in one operation, than going over twice with others. Made with both Chilled Metal and Cast Steel Discs polished. Send for circular and price list. Manufactured by

WHEELER & MELICK CO.,

Albany, N. Y., for the United States, except New England.

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THRESHING MACHINES & HORSE POWERS

Best at Centennial Trial.

Threshers for all sizes of Horse Powers and Steam, Lever Powers for 4 to 10 Horse, and Endless Chain Powers for 2 and 3 Horses—and Engines from 4 to 10 Horse Power. All with late and important improvements. Send for Circular.

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MEDAL MACHINES.

New York State Agricultural Works.

First Premiums at all Competitive Trials.

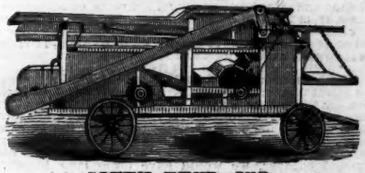
Railway, Chain and Lever Horse Powers, Threshers and Cleaners, Threshers and Shakers, Clover Hullers, Feed Cutters, Wheel Horse Rakes, Horse Pitchforks, Shingle Machines, Straw Preserving Rye Threshers, Portable Steam-Engines, Cider and Wine-Mills and Presses, Dog and Pony Powers, etc., etc.

WHEELER & MELICK CO.,

ALBANY, N. Y.

Send stamp for Circular and report of Centennial trial.

The Birdsell Clover Separator,



SOUTH BEND, IND.

FOR SALE.

A VALUABLE DAIRY FARM of about 300 acres, buildings, water, &c., all in best condition. $400 worth of milk at wholesale is now sold monthly. Will be sold cheap. For particulars address

WM. LINCOLN & CO., Warren, Mass.

Cotton Seed Huller

AND FEED-MILL COMBINED,

For Plantations and Oil-Mills. Used by Planters, the Oil-Mills in New Orleans and through the country. Send for Circulars and Judges Report. Pay for itself in a few weeks. D. KAHNWEILER,

120 Centre St., New York.

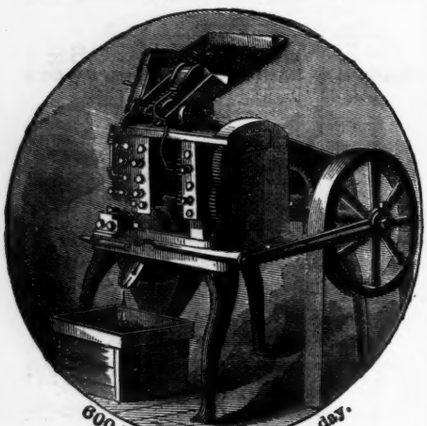
THE

GLOBE NAIL.

THE BEST HORSE SHOE NAIL EVER MADE.

About ten years ago the **GLOBE NAIL COMPANY of Boston,** put on the market the first pointed, polished and finished Horse Shoe Nails ready for driving. Previous to that time all Horse Shoe Nails were pointed, and most of them made, by the shoers in their own shops at the rate of but six pounds per day.

The **Globe Nail** was at once found to be much cheaper and better than any then in use. It soon became so popular that all manufacturers of Horse Shoe Nails were compelled to make their Nails to resemble the Globe. For the last ten years it has been the model. Each year the Nail has been greatly improved in quality, and to such a point have we educated the shoers that now they will hardly use a nail unless it is absolutely perfect.



600 lbs. Finished Nails per day.

At the Centennial Exposition in Philadelphia, we were awarded the Medal and the following report, far stronger than that given upon any other Nail:

INTERNATIONAL EXHIBITION, 1876.
U. S. CENTENNIAL COMMISSION.

[BUREAU OF AWARDS.] PHILADELPHIA, June 22, 1876.

No. 239, Globe Nail Co., Boston, Mass.:

Horse Shoe Nails, Pointed, Polished and Finished. The uniformity in size, smoothness of finish, hardness and tenacity of the iron, closeness of fibre, and excellence of the head and point, the tensile strength of body, and riveting properties of these Nails, unite in making them of the very highest class of manufacture.

Recommended for an Award of Merit.

DANIEL STEINMETZ, Phila., Chairman,
J. D. IMBODEN, Richmond, Va.,
CHARLES STAPLES, Portland, Me.,
G. L. REED, Clearfield, Pa.,
DAV. McHARDY, Aberdeen, Scotland,
T. DIEFENBACH, Germany,
} Group Judges XV.

We annex a sample of the testimonials we receive daily from all parts of the country:

ST. LOUIS, MO., June 8, 1877.

GLOBE NAIL CO., BOSTON, MASS.

Gentlemen: Find enclosed advertisement and postal card concerning your Nail. [Referring to a scurrilous advertisement and postal card, disparaging the Globe Nail, circulated by a rival manufacturer over the humbug signature of "Humane Society for the Prevention of Cruelty to Animals." No Society bearing that title ever existed.] As I take a great interest in the prevention of cruelty to animals, —horses in particular,—I desire to say a few words in favor of **The Globe Nail.** Though I am not a very extensive Horse Shoer, yet I have used enough Nails of the different makes to speak knowingly. I have used the Globe Nail in my shop and on the race track for six years, on all classes of horses, from the heavy draft horse to the tender footed running horse; and I can safely say **it has no superior in point of Toughness, Shape, and Finish, if it has any equal.** I have used about fifteen hundred pounds of Globe Nails a year for the last six years, and in that time I have found four imperfect Nails, two of which I returned to you about two years ago and received in return four perfect ones, for which accept my thanks. If my men had no better sense than to drive those imperfect Nails in a horse's foot, I would not consider it the fault of the Nail if the horse was lamed. If bosses would look more to the competency of their men and less to trying to get shoeing-nails a few cents a pound cheaper, we would have fewer lame horses. **I know for safety and durability, with a man who understands his business to drive them, your Nails can't be beat!** I am willing to pay, without any suit, for all horses that are lamed in my shop by using the Globe Nail. As long as it is made as at present, I shall continue to use it, even if I could get other Nails for nothing. I consider it the safest Nail that was ever driven in a horse's foot.

Yours Very Respectfully,
(Signed,) P. H. O'NEILL,
Horse Shoer, No. 1007 Broadway.

P. S.—I think I could get every boss in St. Louis to sign this if I thought it necessary. P. H. O'N.

The best Horse is sure to win. SO CLEAR THE TRACK FOR THE

GLOBE NAIL CO.

BUTTER WORKER.

The most effective, simple and convenient yet invented. **Works 30 lbs.** *in less than* **5 minutes,** *thoroughly working out buttermilk* and *mixing the salt.* **AGENTS WANTED.** Send for circular.

A. H. REID,
6 N. Eighteenth St., Philadelphia Pa.

BENSEL'S PATENT BUTTER COOLER.

The best and most convenient refrigerator ever invented, being made of porous unglazed earthenware, and is both simple, durable, and cheap. *It operates without cost, using only water, and is specially adapted for warm climates.* Sample boxed and sent by express on receipt of $1.00. For circular and further information address

AGUSTUS REEVE,
31 Market St., Camden, N. J.

CHOICE BUTTER.

(From Massachusetts Agricultural College Farm.)

"AMHERST, MASS., Feb. 9, 1878. VERMONT FARM MACHINE COMPANY: We are so well pleased with the Cooley Creamer that I feel bound to say a word in its favor. It takes us only twenty minutes to churn, and the extra yield of butter is wonderful. I have cheerfully recommended it to the Japanese government above all other systems.

Yours very respectfully, A. A. SOUTHWICK, Farm Supt."

Address for circular,
Vt. Farm Machine Co., Bellows Falls, Vt.

The LANCASTER BUTTER CARRIER,

with a **cup** for each print, will deliver print butter to market in perfect shape. Also carriers without cups, for square or oblong prints. Prices low.

Can now furnish **Initial Stamps** for printing butter, any Initial or Initials to order. Sent by mail. Prices and circulars on application.

E. L. RESH, Lancaster, Pa.

BUTTER TO COLOR Made to sell at Highest Price; will take Premiums. Dairy Receipt-Book free. Address, Mrs. B. SMITH, P.O. Box 1954, 72 N. Fourth St., Philadelphia, Pa.

HULL & SCOTNEY,

346 North Water St., Philadelphia, Pa.,
GENERAL COMMISSION MERCHANTS,

and Wholesale Dealers in Butter, Cheese, Eggs, Poultry, Lard, Tallow, Game, Potatoes, Apples, Hay, Grain, Flour, Fur, Wool, Cotton, Peanuts, Broom Corn, Foreign and Domestic Fruits. **Liberal Cash Advances** made on all Shipments but perishable goods. Send for Price List, Stencil, &c., &c. **Reference Cash,** or we refer to any Responsible House in our city.

TUCKER'S

IMPROVED

Egg Carrier.

The strongest, safest, and best in use, having advantages possessed by no other. **Agents wanted.**

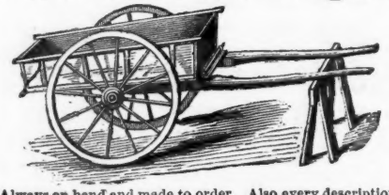
WM. C. BARKER & CO.,
Sole Proprietors and Manufacturers, 139 Market St., Phila., Pa.

CIDER PRESSES,

Apple Graters, Elevators, Etc.

BOOMER & BOSCHERT PRESS CO.,
SYRACUSE, N. Y.

Farm Carts and Wagons



Always on hand and made to order. Also every description of Heavy Cart and Wagon for city and country use and for shipping. Illustrated Circulars free by mail.

JOHN L. KIPP, 163 Eldridge Street, New York.

ANVIL & VISE COMBINED.

3 Sizes, No. 1, weight 40 lbs., $4.50; No. 2, weight 25 lbs., $3.75; No. 3, weight 14 lbs., $3.00. The face of the anvil is chill-hardened, rendering it of sufficient strength and hardness to withstand all ordinary usage. Every farmer should have one. Terms cash. Delivered on cars at Worcester.

RICHARDSON MANUFACTURING CO.,
SOLE MANUFACTURERS. **Worcester, Mass.**

"GET THE BEST."

HIGHEST AWARD at the CENTENNIAL.

THE

IMPROVED

BLANCHARD CHURN.

PRICE GREATLY REDUCED

Cheap, because so well made, durable, and efficient. Nine sizes made, churning from one, to 150 gallons.

Warranted to be exactly as represented. Sold by all dealers in *really* first class Farm Machinery.

PORTER BLANCHARD'S SONS, CONCORD, N. H., Sole Manufacturers. Send for Circulars.

The Rectangular Churn.

Simple, efficient, and *always reliable.* No inside fixtures. Fifty per cent in labor saved over *any other churn.* Five sizes made. The Highest award given over all competitors at the late Dairy fair in Chicago. An energetic man wanted in every town, to act as agent. One churn sent at wholesale where we have no agent.

CORNISH & CURTIS,
Fort Atkinson, Wis.

THE LILY

BUTTER-WORKER

We guarantee it the best and cheapest Machine in the world. No hard labor. Mixes the salt thoroughly, and takes all the milk out, with five to ten minutes work. Circulars sent on receipt of stamp.

HENDERSON & CO.,
316 Race St., Phila., Pa.

WILLIAM CROZIER has much pleasure in calling the attention of Cow-keepers, Farmers, and Dairymen to the NEW SELF-MILKING APPARATUS. This Apparatus or Cow Milker, has been tested by a large number of practical Agriculturists, Dairymen, &c; and, without exception, merited high encomiums and commendations, for its adaptability and wonderful rapidity in the Milking of Cows. It is considered one of the most invaluable and useful Machines yet invented.

Amongst its many advantages are—

1st—It is SELF-ACTING, easy of application; and can be used by any person, however ignorant of Milking.

2nd—It will Milk any Cow in FOUR Minutes effectually, and its use is more agreeable to the Cow than Hand-Milking.

3rd—It is a great boon in the case of Sore or Corded Teats.

4th—Its Usefulness, Simplicity, Saving of Time, Cleanliness, Durability, and Cheapness, prove it to be a most important and necessary adjunct to a Dairy, and it has only to become better known to be universally used.

Sent free on receipt of Post Office order for $5.

Printed Instructions accompany each Machine.

MILK TUBES.

COW-KEEPERS should not be without one of these, as they are invaluable for sore or Corded Teats.

PRICE $1.00 each.

WM. CROZIER, Northport, L. I., N. Y.

Improved Butter Tubs and Coolers,

with movable Ice Chambers. Best in the market. Are made in 12 different sizes, of white Cedar, bound with galvanized iron or brass hoops. Within the tub is fitted a tin Cooler, having a movable Chamber for ice at each end. On the tin is constructed a series of ledges, on which rest the shelves for supporting the butter; suitable for round, half-round, and square prints or rolls. Can be locked for shipping. Will keep butter in good order from 18 to 24 hours. Capacity from 12 to 200 lbs. Price from $3 to $25.

J. G. KOEHLER, Manufacturer,
503 North 2nd St., Philadelphia, Pa.

Agricultural

Insurance Company, of Watertown, N. Y.

Capital $200,000.00. Net Surplus, $201,999.97. Total assets for the security of Policy holders, January 1st, 1878, $1,058,-157.60. Insures only Farm Property and Residences against fire and lightning. Takes no business risks.

GOOD MEN WANTED

to sell the celebrated cow fetter. It sells on sight. Warranted to make the worst kicking cow gentle to milk, in three days. There is nothing equal to it for breaking heifers. Retail price $2. For further information send for illustrated circular to

H. J. SADLER,
Sole Proprietor,
Warren, Trumbull Co., Ohio.

"Almost all Sewing Machine Dealers are now giving a **JOHNSTON RUFFLER, TUCKER,** and **CORDER,** free with each machine they sell."

BENSON, MAULE & CO.

would respectfully give notice that, through the retirement of W. A. Burpee, the firm name of BENSON, BURPEE & Co. has been changed to the above. With increased facilities, ample capital, etc., they are able to offer decided inducements in

Extra Choice Jersey & Ayrshire Cattle, Cotswold, Southdown & Leicester Sheep.

Our **BERKSHIRES, YORKSHIRES, CHESTER WHITES,** and **POLAND CHINAS,** for delivery the present month, are *unsurpassed* both in quality and pedigree. Our supply of young pigs of the above breeds was never finer. Magnificent, well marked Berkshires, served by the famous **Imp. boar the Collier,** at unusually low figures.

HIGH-CLASS POULTRY.—Eggs for hatching from best fowls, securely packed @ average price of $3 for 13. Safe arrival of every shipment and all stock to be as represented, guaranteed. For further particulars and catalogue, address

BENSON, MAULE & CO., 223 Church St., Philadelphia, Pa.

Imperial Egg Food.

FOR ALL VARIETIES OF **POULTRY.**

(Trade Mark.)

LAYING HENS, YOUNG CHICKS, DUCKS, and TURKEYS.

WILL MAKE HENS LAY,

Winter and Summer, support Fowls during moulting, keep them constantly in fine condition, and increase their profit 100 per cent. Half of the chicks die annually. This makes bone and muscle early, and will save them. Packages to mix with 50 weight ordinary feed, 50 cts.; larger for $1.00 and $2.00. Sent prepaid on receipt of price.

For sale by Druggists, Grocers, and Postmasters. **Local Agents Wanted.**

WHOLESALE AGENTS.

H. B. Arnold & Co., Boston. | B. K. Bliss & Sons, New York. | Benson, Maule & Co., Philadelphia. | O. C. Swain & Co., San Francisco, Cal. **CHARLES R. ALLEN & CO., Proprietors, P. O. Box 103, Hartford, Conn.**

EGGS FOR HATCHING.

From fine **thoroughbred** Poultry. $3 per 13. Securely packed. Magrane's Light Brahmas, also Dark Brahmas, Partridge Cochins, and Silver-Laced—White Booted—(quaint and pretty), and Japanese Bantams.

Our reputation as judges and breeders is ample guarantee for the excellence of our stock. Address

MAGRANE & FAIRSERVICE,
104 Montclair Ave., Newark, N. J.

See Frontispiece in March Agriculturist.

EGGS for Hatching.—White Cochin $3 per 13; White and Brown Leghorn, and Black Cochin, $2.50 per 13; B. B. R. Game Bantam, $2.00 per 15. J. & G. BOYER, Erie, Pa.

EGGS!—P. Rocks and L. Brahmas, Upham, Gilman, Drake, Todd, and Josselyn strains. $2 per 13. From birds scaling over 90 points. HILLS & CO., Plaistow, N. H.

PLYMOUTH ROCKS and Light Brahmas. First-class stock. Eggs, 13 $1.50, 26 $2.50. N. P. PAYNE, New Britain, Conn.

PLYMOUTH ROCKS.

Highest quality of Stock. Have reduced price of Eggs to $2.00 per setting for this season. Orders filled promptly and satisfaction guaranteed. W. H. CUMMINGS, Millidale, Ct.

PEKIN DUCK and BROWN LEGHORN

Eggs, at prices to suit the hard times. Send for my circular before purchasing elsewhere. Address

EVAN LEWIS, Scarlet's Mill, Pa.

High Class Poultry.

Light and Dark Brahmas, Partridge and White Cochins, Brown and White Leghorns, Houdans, and G. S. Bantams. For sale at all seasons, at reasonable prices. Eggs, securely packed in new baskets, $3.00 per 13, or $5.00 for 26. *Send for new, novel, practical and useful Circular.*

GEO. S. JOSSELYN, Fredonia, N. Y.

GAME FOWLS. RED IRISH SETTERS,

and **Show Carrier Pigeons,** shipped by **J. C. COOPER, Cooper Hill, Limerick, Ireland,** winner of Gold Medals at Paris and New York. **Bronze Medal and Diplomas Centennial, Philadelphia;** also Thorough-bred Hounds, Beagles, and other Dogs. J. C. C. can likewise select **Sheep, Cattle,** and **Horses** for clients, having had long and large experience in them.

I-DO-IT for 2 stamps—Send Catalogue of Books, Stock, Fowls. The latter of best strains and pedigree. "*Amateur's Manual,*" or Specific Mating of Thorough-bred Fowls," 25 cents. "*Breeding and Management,*" or thorough-breds for practical use, 50 cts., both for $1 and 4 stamps. "*Eggs for hatching,*" Lt. or Dk. Brahmas, from mated hens $5, from good stock $3. Ply. Rocks or Houdans, $4. White or Brown Leghorns and B. R. G. Bantams, $3. Bronze Turkeys $5. Pekin Ducks, $4 per sitting. Stock and fowls for sale.

I. K. FELCH, Natick, Mass.

Brown Leghorn Fowls.

They excel in **Egg-producing,** are **Non-setters,** I will forward young broods of chicks, age from 10 to 21 days, at $1.00 per chick, after June 1. Guarantee safe arrival in a healthy condition. Eggs $3.00 per 13. Send for Circular.

EDWARD LUTZ,
Or **Emsworth, Pa.** 80 Fifth Ave., Pittsburg, Pa.

EUGENE B. PENDLETON,

Breeder of White Leghorns,

WESTERLY, R. I. Eggs, $2.00 per doz. Have bred these exclusively for 11 years. Shall breed this season from 3 yards.

No. 1 will have a cock that has scored 94 points.
No. 2 " " " " " 91 "
No. 3 " " cockerel " " 90 " *Felch,* Judge.

Showed twice this season. Result, two first premiums.

Day's $60 Automatic Incubator

Hatches and rears the young chicks! Highest possible endorsements!

Day's Fire Alarm Clocks.

Run in any position; keep good time, and give warning when there is **danger of fire.** Sent by mail. Price $5. Address

DAY BROS. & CO.,
92 Linden Avenue, Baltimore, Md.

SUNNYSIDE POULTRY FARM.

Eggs from the following varieties at $3.00 per setting.

Brown Leghorns,	Pat. Cochins,	Black Cochins,
White Leghorns,	Plymouth Rocks,	Dark Brahmas

A Photograph of the finest Poultry House in the U.S., will be sent to any address for 25 cts.

W. G. TRACY,
Towanda, Pa.

J. W. REYNOLDS, Cuckoo, Va., Breeder, Shipper, and Importer of **Pure Bred Fowls.** Write for Price-list.

☞ **FRIENDS!** If you are in any way interested in

BEES OR HONEY,

We will with pleasure send you a sample copy of our **MONTHLY GLEANINGS IN BEE CULTURE,** with a descriptive price-list of the latest improvements in **Hives, Honey Extractors, Artificial Comb, Section Honey Boxes,** all books and journals, and everything pertaining to Bee Culture. *Nothing Patented.* Simply send your address on a postal card, *written plainly,* to

A. I. ROOT, Medina, Ohio.

Send to GEO. W. SIMMONS,

Manufacturer and Dealer in all kinds of **BEE KEEPER'S SUPPLIES, Newark, Delaware,** for Price List of Bee Hives, Extractors, Veils, Queens, &c., &c.

PRICES REDUCED.—A. S. BEEKMAN, South Branch, N. J., offers for sale pure-bred Poland China pigs, at $12 per pair, not akin. Ship when two months old. Also some six months old coming in profit.

The Best and Cheapest.

BUCHAN'S

Cresylic SHEEP DIP.

Patented May 28th, 1867, Re-issued July 30th, 1872.

A Saponaceous Compound with Cresylic and Carbolic Acid.

For Preventing and Curing the Scab and all parasitic diseases of the Skin. Will destroy Lice, Tics, Fleas, &c.

Is beneficial to the general health and condition of the flock. The use of this **DIP** will cleanse and whiten the Fleece—also increased the growth or weight sufficient to be a full equivalent for the cost of the Compound.

This Preparation is Warranted to be **entirely harmless** and **free from all poisonous** Compounds, and will positively do all that we claim for it. Put up in packages of 1, 5, 10, 50, 100, and 200 pounds.

Buchan's Cresylic Ointment.

Certain Death to the Screw Worm or Grub.

It not only destroys the worms, but cleanses and quickly heals up the offensive sores made by it.

No fly will attack a wound to which this preparation has been applied. Sheep which rarely recover from the attack of the worm under the ordinary treatment, are quickly cured by this application. In solution, this ointment will be found invaluable for Healing Saddle Galls, and all abrasions of the skin of animals.

For further particulars, send for price lists and circulars to

KIDDER & LAIRD,
83 John Street, New York.

W. ATLEE BURPEE & CO. (late of Benson, Burpee & Co., formerly W. Atlee Burpee), breed and ship the finest thoroughbred Ayrshire and Jersey Cattle, Southdown and Cotswold Sheep, Chester White, Yorkshire, Berkshire, Essex, and Poland China Hogs, Land and Water Fowls and Eggs, Fancy Pigeons, and Dogs—of the best strains in the world.

Burpee's New Complete Catalogue and Breeders' Manual, *just out,* is 1 rimfull of reliable descriptions, handsome illustrations from life, and low prices. *Don't fail to write for it at once*—it is **FREE.** Address plainly

W. ATLEE BURPEE & CO., 221 Church St., P. O. Box 1890, **Philadelphia, Pa.**

PURE-BRED IMPORTED

JERSEY CATTLE.

Mr. E. P. P. FOWLER, Southampton, England,

Will sell at auction, without reserve,

On Tuesday, May 21st, 1878, at 12 o'clock, noon, at

HERKNESS' BAZAAR,

Ninth and Sansom Streets, Philadelphia,

TWENTY-FOUR PURE-BRED

JERSEY HEIFERS.

Direct from the Channel Islands. To arrive per steamship Otranto, leaving Southampton April 19th, 1878.

☞ **Catalogues mailed on application.**

ALFRED M. HERKNESS & CO., Auctioneers,
PHILADELPHIA.

ROCK'S

IMPROVED TETHER

OR

PICKET STAKE,

with combination swivel, warranted not to wind up or foul the chain or rope, the best ever invented for tethering Cows, Horses, or other animals in pasture. No fences needed, all the waste grass utilized. Send for circular and information how to tie and what to tie with. Address

EUGENE ROCK,
Glen Head, Queens Co., N. Y.

THOROUGHBRED and GRADE

JERSEYS

FOR SALE.

Thoroughbred	HEIFER CALVES,	weaned and unweaned.
do.	BULL CALVES,	do. do.
do.	YEARLING HEIFERS.	
do.	do. BULLS, fit for service this spring.	
do.	2-year-old BULLS.	
do.	do. HEIFERS, in calf.	
do.	HEIFERS and COWS, 3 to 8 years old.	

Grade Jersey Heifers and Cows of all ages, from two weeks to seven years old. I have nearly 100 head to select from. All my stock is bred expressly for their butter qualities, and no calves are raised from dams that do not yield 9 lbs. or more of splendid butter per week, when fresh. All orders requiring me to select for purchasers are solicited at once, as I shall fill them in turn as received, but I much prefer that purchasers examine for themselves. Terms reasonable. Apply at once to THOMAS FITCH, New London, Conn.

WILLIAM CROZIER,

BEACON HILL, Northport, L. I., N. Y.,

Importer and **Breeder** of **Ayrshire** and **Jersey Cattle, Southdown Sheep, Berkshire Swine, English White Dorking Fowls,** and **Shepherd Dogs.** *Received a Medal and Diploma on stock at the Centennial Exhibition.*

N. CUILBERT,

Evergreen Farm, Gwynedd, Pa.,

Importer and Breeder of Improved Blooded Live Stock, Horses, Cattle, Cotswold and Southdown Sheep, Chester, Berkshire and Yorkshire Pigs, Toulouse, Bremen, Hong Kong, White China and Wild Geese, Cayuga, Rouen, Aylesbury, Pekin and Musk Ducks, Bronze, Blue, Buff and White Turkeys, Dorkings, Brahma, Cochin, Guinea and all other Fowl, Deer, Swans, Peacocks, Pigeons, Eggs, &c., at low prices. Best Breeds of Dogs and Maltese Cats, Rabbits, Ferrets, Guinea Pigs, White Mice, &c. Song Birds of all kinds, and Shetland Ponies. Fine Milch Cows always on hand. Newfoundland Pups, Deer, and Swan wanted.

D. M. MAGIE, ORIGINATOR AND MANAGER.
T. R. KUMLER, BUSINESS MANAGER.
The D. M. MAGIE CO.,
ORIGINATOR AND BREEDERS
OF THE WELL KNOWN
MAGIE OR POLAND CHINA HOGS.
OXFORD BUTLER CO., OHIO.
WORLD BEATER

Ohio Improved Chesters, received **First Premiums** in a majority of the States. Send for their description, and Choice Poultry, and get ready for the Fall Fairs. L. B. SILVER, Cleveland, Ohio.

Centennial Devon Prize Herd, belonging to **J. CRESTON MORRIS, M. D.,** Breeder of **Devons, South Downs,** and **Berkshires,** Fernbank, near West Chester, Pa. May be seen Thursdays.

PIGS.

Parties ordering at once, can get full blood Poland China pigs, 6 to 8 weeks old, at $5 each—as good as the best A No. 1. E. OLIPHANT, New Lisbon, Burlington Co., N. Jersey.

JERSEY RED SWINE. Heaviest weights, easiest kept. Pigs from premium stock. Send for Circular. JOHN S. COLLINS, Moorestown, N. J.

TEAS REDUCED

OUR TERMS ARE THE BEST.
Send for our New Reduced Price List.
THE GREAT AMERICAN TEA COMPANY,
P. O. Box 5643. 31 and 33 Vesey St., New York City.

RELIEF FOR HARD TIMES!!
A Sure Investment!!
BUY LAND OF
THE UNION PACIFIC RAILROAD COMPANY.
This Company has **3,000,000** acres of the **Best in the world**; for sale in **NEBRASKA**, at **Prices** and on **Terms** that make it **cheaper** to **own a farm** than be without. **Short Winters! Long Summers! Come and see. Cheap fare from all principal points.**
Write for information. **Sent Free** everywhere.
LEAVITT BURNHAM,
Land Commissioner U. P. R. R. Co.,
Cor. 9th and Farnam Sts., **Omaha, Neb.**
☞ Refer to this advertisement.

Some Very Choice
Nebraska Lands.

Selected with great care. Well located in every respect, and presenting a splendid opportunity to a few families, who wish to move West. Can be had at a bargain by addressing immediately,
AUGUSTUS SNOW,
2 Exchange Court, Room 4,
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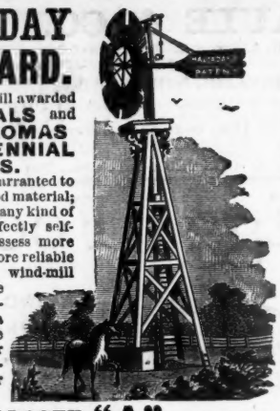
TUBULAR BOW SOCKETS FOR TOP BUGGIES

HALLADAY STANDARD.



The only wind-mill awarded
TWO MEDALS and TWO DIPLOMAS
by the **CENTENNIAL JUDGES.**
Every machine warranted to be well made of good material; to do good work in any kind of wind; to be perfectly self-regulating; to possess more power, and to be more reliable than any other wind-mill made. Each piece is fitted and numbered, so that a stranger can put the mill up, using our drawings and printed instructions for a guide.
Send for **CATALOGUE "A"** and Price List.
U. S. WIND ENGINE & PUMP CO.,
BATAVIA, ILL.

WIND ENGINES.

for pumping water, grinding grain, irrigating, and general use where economy and regular power is required. Adapted to all kinds of farming and mechanical business. Estimates given and printed instructions furnished. Apply to
S. W. KENNEDY, 516 Fairmount Ave., Philadelphia. AGENTS WANTED.

THE WALKER WASHER.

Thousands of Them in Actual Use.
They are a Perfect Success. Simple, Durable, and Cheap.
Agents wanted in every town where they are not already being sold. Retail price $8. Send for circular. Address
ERIE WASHER CO., Erie, Pa.

WORD MAKING AND WORD TAKING. The best game. Sent by mail for 27 cents, and Dealers supplied by B. M. HAMMETT, 1,284 Broadway, N. Y. C. E. HAMMETT, JR., Newport, R. I.

JANUARY 1st, 1878.

THIRTY-THIRD ANNUAL STATEMENT
OF
THE MUTUAL BENEFIT
LIFE INSURANCE CO.,
NEWARK, N. J.

RECEIPTS DURING 1877.

Premiums		$4,508,315 79
Interest	$2,012,851 30	
Deduct Premium on United States Bonds purchased during the year	314,203 76	
		1,698,647 54
		$6,206,963 33
Balance, January 1st, 1877		**$31,317,821 48**
		$37,524,784 81

EXPENDITURES DURING 1877.

Claims by Death	$1,921,007 96
Matured Endowments and Annuities	107,753 50
Surrendered Polices	1,104,746 75
Salaries, Printing, Advertising, Postage, Office and Contingent Expenses	176,637 51
Commissions and Agency Expenses	301,611 70
Physician's Fees	25,239 17
Taxes and Legal Expenses	78,745 43
Deficiency and Expenses on Foreclosure Sales	16,448 09
Dividends to Policy-holders	1,510,464 74
	$5,272,654 85
Balance, January 1st, 1878	**$32,252,129 96**
	$37,524,784 81

ASSETS.

Cash on hand		$642,976 48
Real Estate		294,372 23
United States Bonds, 6 per cents	par	5,011,500 00
Bonds, City of Brooklyn, N. Y.	"	65,000 00
" " Newark, N. J.	"	3,390,000 00
" " Elizabeth, N. J.	"	550,000 00
" " Rahway, N. J.	"	97,000 00
" " Utica, N. Y.	"	145,000 00
" " Springfield, Ills.	"	89,000 00
" " Orange, N. J.	"	80,000 00
" " Auburn, N. Y.	"	150,000 00
" " Jersey City, N. J.	"	50,000 00
" " Dayton, O.	"	130,000 00
" " Cleveland, O.	"	566,500 00
" " New Brunswick, N. J.	"	14,000 00
" " Erie, Pa.	"	152,000 00
" " Toledo, O.	"	173,000 00
" " South Bend, Ind.	"	61,500 00
Bonds, City of Lafayette, Ind.	par	$160,000 00
" " Sandusky, O.	"	100,000 00
" " Dover, N. J.	"	16,000 00
" Essex County, "	"	2,148,000 00
" Union " "	"	132,000 00
" West Orange Township, N. J.	"	123,000 00
" East " "	"	146,841 73
Annuity Bond, State of Mass.	"	800 00
Premium Loans on Policies in Force		5,310,178 64
Bonds secured by First Mortgage on Real Estate		12,410,094 09
Agents' Balances		43,366 79
		$32,252,129 96
Interest due and accrued		716,970 59
Premiums due, not yet received, on issues principally of December, and deferred premiums		212,727 94
Total		$33,181,828 49

NOTE.—MARKET VALUE OF UNITED STATES AND OTHER BONDS, ABOVE PAR, $1,203,123 75.

LIABILITIES.

Reserve Fund, four per cent (Mass. standard)	$30,037,999 00	
Policy Claims in process of adjustment	493,151 00	
Dividends due and unpaid	206,207 16	
Estimated Expenses on unreported premiums	21,272 79	
Premiums paid in advance	16,195 95	
		$30,767,825 90
Surplus as regards Policy-holders, January 1st, 1878		$2,414,002 59
Dividends declared on 1877 Premiums, payable in 1878		1,512,799 96
Unapportioned Surplus, held as Special Guarantee Fund		901,202 63

Number of Policies in force January 1st, 1878, 42,796, Insuring $126,193,045 00.

LEWIS C. GROVER, President.

EDWARD A. STRONG, *Secretary.*
BENJAMIN C. MILLER, *Treasurer.*
JAMES B. PEARSON, *Vice-President.*
BLOOMFIELD J. MILLER, *Actuary.*

L. SPENCER COBLE, - - - - State Agent,
SOUTHERN NEW YORK AND NORTHERN NEW JERSEY, No. 137 BROADWAY, NEW YORK.

MRS. OLD FOGY DOES NOT USE THE ROBBINS WASHER. | MRS. COMMON SENSE DOES. TAKE YOUR CHOICE.

TO MAKE MONEY
SECURE AN AGENCY
FOR THE
CELEBRATED
ROBBINS FAMILY WASHER.

This machine has been ON TRIAL for the past six months in every State and Territory in the Union, and the almost unanimous verdict of housekeepers is this: **"Your Washer has proved a complete success."** Some of the reasons why this popular verdict has been reached may be found in these facts:

The Robbins Washer is an entirely NEW MACHINE. It is constructed upon a NEW PRINCIPLE—that of forcing water by downward pressure through the fabric. The dirt or discoloration is removed by water force—there is no rubbing or friction about it. This principle is the only one that has ever been successfully applied to the cleaning of fabrics by machinery. All others have failed in one or more essential points. The Robbins Washer will cleanse perfectly, without rubbing, all kinds of wearing apparel, table or bed linen. It will not injure the most delicate fabric. It is the greatest bleacher extant, and for this purpose alone is worth ten times the price of the machine. It is simple, self-operating, never gets out of order, and will last a lifetime. It saves time; it saves labor; it saves material.

By purchasing a ROBBINS WASHER you can count the hard drudgery of the washboard among the things of the past.

Therefore, we confidently say to every housekeeper in the land, You want a ROBBINS WASHER. You cannot afford to be without one. It will pay to buy one.

THE RETAIL PRICE IS ONLY **$3.50.**

Sample to those desiring agencies, $3.

In bringing the Robbins Washer before the public it becomes necessary to take into brief consideration the

ART OF CLEANSING FABRICS,

which, although so common, is yet imperfectly understood. Having had a lifelong experience in the laundry business—in connection with first-class hotels, public laundries, asylums, hospitals, &c.—we know whereof we speak. The numerous devices of friction rollers, pounders, squeezers, dashers, agitators, steam wash boilers, &c., have all done very well, so far as it was possible for such principles and devices to do. But they have all failed in one or more of the three essential points, viz.: The saving of labor, the wear and tear of clothes, or in perfectly extracting the dirt or discoloration—all of which are accomplished by the ROBBINS LITTLE WASHER.

WHAT IS IT THAT REMOVES THE DIRT?

You may ask all washerwomen and housekeepers, and your answer from nine out of ten will be: "Plenty of elbow grease;" or, in other words, plenty of hard, laborious rubbing on the washboard. And such is the case, for you first have to rub soap upon the cloth, then you have to rub it in to make the dirt soluble. But does that remove it? No: to do that you must first dip it in the water, and then rub it in again to force water through the fabric. That is what removes dirt after being softened by the chemical action of the soap upon it.

The way in which this could be the most economically accomplished is what we have so long and patiently sought after, and at last a principle has been demonstrated that in uniting all the above named, in

THE PRINCIPLE OF THE LITTLE WASHER

is embodied all the essential points. First, we have the desired heat, which expands the fabric and causes it to discharge the dirt. Second, we obtain a powerful suction beneath the clothes, which causes a rapid downward current of water force through and through them, thereby removing the dirt. Third, we use a large body of water, which holds the dirt in solution. Thus we cleanse thoroughly, rinsing the clothes as usual being all that is required to complete the operation.

The Washer is composed of solid galvanized iron, which will not rust or corrode. There are two sizes—the No. 1, or family size, for ordinary household use; and No. 2, or hotel size, suitable for country hotels, boarding-houses, laundries, &c.

OUR METHOD OF HANDLING.

We want agents everywhere throughout the United States, in every State, county, town, and hamlet. The retail price of No. 1 Washer is $3.50; of No. 2 Washer, $5. But we sell sample machines of No. 1 size at $3; No. 2, or small hotel size, at $4. Canvassers for this Washer can make more money with it than with anything ever before offered to the public. As, for instance, we established two agencies to test the sale of the Washer upon its merits—one in Naugatuck, Conn., and one in Providence, R. I. The former, Mr. Charles Daniels, in a town of about 2,000 inhabitants, sold by canvassing in two weeks eighty-two Washers. In the latter place Mr. James Roberts, now of Naugatuck, Conn., sold in less than three months, without canvassing or advertising outside the store, over 500 Washers. A thing never before heard of.

TO PERSONS OUT OF EMPLOYMENT

we would say, if you want to secure a paying business, now is your time. Don't wait till the best territory is taken up, but send at once for sample machine and go to work. By following instructions you can sell to nearly every family in your neighborhood. Others have done it, and there is no reason why you should not. Full directions and instructions accompany each machine. Also, special terms to agents, circulars, testimonials, &c.

All orders must be accompanied with cash.

Remit by money order or registered letter to
THE GEO. D. BISSELL COMPANY,
Naugatuck, Conn.